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MORS Workshop
The Global War on Terrorism:
Analytical Support, Tools, and Metrics of Assessment
30 November-2 December 2004
US Naval War College
Newport, Rhode Island

Technical Chair: Dr. William Forrest Crain

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MORS Workshop: The Global War on Terrorism: Analytic Support, Tools and Metrics of Assessment

30 November – 2 December 2004, Naval War College, Newport, Rhode Island

BACKGROUND

The September 11, 2001 terrorist attacks on the World Trade Center and the Pentagon have thrust the United States into the Global War on Terrorism (GWOT). As a result the US has joined the rest of the world by entering into a new age of instability. The current strategic environment demands that our armed forces conduct operations simultaneously across the full spectrum of conflict — from conventional combat in major contingency operations like OPERATION IRAQI FREEDOM (OIF) to peace operations such as OPERATION JOINT FORGE. Subsequently, the value of analysts who support the warfighter has and will continue to be a significant combat multiplier in these efforts.

Recent experiences in providing analytic support to the combatant commanders in the prosecution of the GWOT have brought to the fore several areas that are of major importance and interest to the warfighter. These include:

- The need to better characterize GWOT and articulate the desired endstate
- The determination of nation state and regional instability
- The conduct of stability operations
- Analytic Tools to support the GWOT
- Metrics of Assessment in the GWOT
- Homeland Defense

With these experiences in mind, MORS hosted a workshop on analytic support to GWOT at the Naval War College, New-

port, RI from 30 November to 3 December 2004. The workshop provided a forum for discussing analytic support, tools and metrics of assessment in the Global War on Terrorism. If the mark of a good MORS workshop is the quality and diversity of the people it brings together, then this workshop was a huge success. The GWOT workshop brought together a diverse group of analysts and decision makers from within DoD, from other government agencies, allied nations, industry, and academia. The workshop attracted over 160 participants representing each service, the joint staff and OSD, several combatant commands (COCOMs), several intelligence organizations, the Department of State, and the US Agency for International Development (USAID). Participants from the UK, Israel, Sweden and Canada were also included in the mix. Several participants brought recent in-theater experience in OIF and/or Operation Enduring Freedom (OEF) to the table as well.

WORKSHOP OVERVIEW

The workshop began with a plenary session that was highlighted by thought provoking presentations by GEN Wayne Downing (plenary), and two members of the Naval War College faculty — Professor Jeff Norwitz (perspective on detainee operations at Guantanamo) and Professor Tom Barnett (author of *The Pentagon's New Map*). Each presentation challenged the audience to examine current national strategy and served to set the tone for the subsequent working group sessions. The

plenary session also included a panel discussion that focused on analytic support to decision makers in theater and featured panelists with extensive analytic experience in theater, to include an allied perspective.

The remainder of the workshop was dedicated to working group sessions in each of the 6 areas of interest listed above. A synthesis group, consisting of senior analysts, was also included to assess insights across all of the working groups and help present a consistent set of workshop findings. The Homeland Defense working group concentrated their effort on laying the groundwork for an upcoming Homeland Defense MORS Workshop (tentatively scheduled for 15-17 November 2005). What follows is a brief synopsis of the activities and conclusions from the other five working groups, followed by some conclusions drawn by the synthesis group.

GWOT PROBLEM DEFINITION WORKING GROUP

This working group focused on GWOT problem definition. The group reviewed current strategic guidance and available literature and developed a framework for analysis. Ideally, this group should have been composed of Department of State representatives, policy staff, counter-terrorism intelligence experts, operators, and operations research system analysis (ORSA) analysts. In practice, the group had limited regional experience and was heavily weighted toward operators and ORSA ana-
(See *WORKSHOP*, p. 31)

Model	Where/When Terrorism										Who are/will be the Terrorists	What Type of Terrorism	What Scale of Terrorism	Impact of Blue Actions	Candidate Blue Actions
	Size	Future Timeframe													
			H	D	W	M	Y1	Y5	Y10	Y25					
NEAR TERM FORCITE	Room									YELLOW	YELLOW	GREEN	RED	RED	
	House														
	Block														
	Town/Suburb														
	City/County														
	State														
	Country					X	X								

Figure 1. GWOT Analytic Tool Assessment Framework

WORKSHOP

(continued from p. 1)

lysts from throughout DoD. Thus, the perspective of the group's effort is one of users of policy guidance. The group attempted to frame and comment upon existing guidance and open literature on GWOT to offer an analytic perspective that may be of assistance to national leadership and in future analytic efforts. The working group recommends viewing the Global War on Terror as an insurgency within Islam.

The existing guidance documents are consistent with respect to the overall objectives for the GWOT. They are:

- Defend the homeland
- Defeat terrorist networks
- Win the war of ideas

However, the guidance is vague on the nature of the conflict. Chapter 12 of the 9/11 Commission Report is very direct in its criticism of the policy for its lack of clarity. The title 'Global War on Terror' is not analytically productive in that terrorism is a tactic to achieve an end. Beyond a criminal organization, the guidance does not describe the threat or source of conflict.

Although controversial and politically sensitive, the term 'insurgency within Islam' is highly descriptive of the nature of the conflict. It provides focus on the threat, the approach, the objectives, and a framework for examining US and community response. It is important to note that this is not a 'war against Islam.' This is a conflict amongst the Muslim community. Al Qaeda is seeking to change the system of governance in the Muslim world. Ultimately, it will be the Muslim community's decision

to accept Al Qaeda's vision, continue with its current regimes, or find an alternative.

This working group's adoption of an insurgency framework, however, is not meant to suggest a disregard for the growth of transnational threats or other 'terrorist' organizations. Multiple views support an insurgent framework, including the 9/11 Commission and General Downing's plenary address at this MORS workshop. It is interesting to note that General Downing participated in the 2002 drafting of the National Strategy for Combating Terrorism and presented an insurgency point of view during his presentation.

Establishing the legitimacy of one's side is central to winning this conflict. Like all politics, insurgencies are local in nature. The US will need a global strategy, yet needs to be locally flexible at the operational and tactical levels. Unlike past insurgencies, this one is complicated by the following issues:

- We do not understand the bounds of this conflict. If there are any, they will be determined by the extremists;
- The insurgency appears to have expansive, nonnegotiable political aims;
- Weapons of mass destruction (WMD) and other technologies have changed the calculus of this insurgency; and,
- The insurgent area of operations has expanded to include the United States, Europe, and the rest of the non-Islamic world.

Additionally, the center of gravity falls naturally from the insurgency framework. It is the *population*, both theirs and ours. This is one of the few common threads among the wide-range of historic insurgen-

cies. The best means for success is for the locals to recognize the need to win for themselves.

Recommendations

The problem definition working group made the following initial recommendations:

First Priority:

- Further examine US National Security Structure:
 - What is the US structure to balance winning the war of ideas and killing terrorists through military action?
 - How can we more immediately improve the inter-agency process and share data/ create a common data system among allies, agencies, and departments?

Second Priority:

- Understand the Muslim Community:
 - How can we understand and utilize the Muslim Diaspora?
 - Are Leadership exchanges, such as those that took place during the Cold War, of value?
 - What are the best methods to understand Muslim cultural boundaries and how might we shape them?
- Wage the war of ideas:
 - What is an alternative to Bin Laden in the eyes of Muslims?
 - What Islamic de-programming techniques are available?
- Educate the American public:
 - How can we communicate the nature of the conflict?

(See *WORKSHOP*, p. 32)

WORKSHOP

(continued from p. 31)

- How can we explain the potential length of the conflict?

Third Priority:

- Define DoD Roles and Missions:
 - How can the military effectively be used across a broad range of missions to address the conflict (e.g. assistance and security)?

FORECASTING NATION-STATE AND REGIONAL INSTABILITY WORKING GROUP

The forecasting working group focused its efforts on four key objectives:

1. Identify and review analytic approaches, tools and models for forecasting national and regional instability.
2. Identify decision maker, analyst, and planner information requirements at various stages of operation (no intervention, intervention, post-intervention).
3. Identify gaps between what analysts and planners NEED and what current approaches, tools, and models currently provide.
4. Recommend ways to fill these gaps.

This working group drew a distinction between strategic analysts and planners, who have a long term perspective and need to understand cause-effect relationships in order to identify the relevant drivers of instability, and operational analysts and planners who have a short term perspective. Working group participants agreed that a forecasting approach that supports strategic analysts must include assessment of alternative policy options. They also agreed that it is critical for operational analysts to be embedded in the decision maker's organization.

Forecasting Approaches

The group examined several instability forecasting models. **Strategic forecasting models** are macro-structural in their orientation. They forecast the likelihood that states will fail or will become unstable from 2 to 15 years in advance. The forecasts are based on statistical analyses of the historical relationships between instability and macro-structural trends in social, political, demographic and economic factors. Examples include:

- Central Intelligence Agency (CIA) Polit-

ical Instability Task Force (aka, State Failure Task Force)

- Center for Army Analysis' ACTOR (Analyzing Complex Threats for Operations and Readiness) model

"This working group drew a distinction between strategic analysts and planners, who have a long term perspective and need to understand cause-effect relationships in order to identify the relevant drivers of instability, and operational analysts and planners who have a short term perspective."

Strategic forecasting models provide accurate, global, systematic analyses of structural conditions conducive to instability. They provide insights into which countries are likely to become more or less stable in the coming years given trends in their underlying conditions. They also attempt to identify the relevant conditions on a country-specific basis that, if altered, could enhance (or further undermine) national stability. On the downside, strategic forecasting models only provide general risk propensities for countries at the national level on an annual basis. As a result, they provide no insights into the specific timing, nature, and location of events that might trigger instability. They are based on correlations between broad conditions and instability. As a result, they cannot identify dynamic causal chains. Beyond vague generalizations, these models do not (and cannot) provide compelling, actionable, course of action analyses.

Operational forecasting models consist of capabilities that monitor, assess, and forecast trends in dynamic behavioral interactions between people, organizations, and states. Examples include:

- ABC Terrorism Prediction Model (Psychonapse Technologies). This model, which has been operational for several years, searches through textual reports for antecedents or precursors to terrorist attacks. Using neural networks, the model can estimate the timing, target, and consequences of a terrorist attack (within the context of a protracted campaign) with about 85% overall accuracy.
- Center for Army Analysis' FORECITE Monitor. Collects data (in near real time) on *who is doing what to whom, when, where and how* around the world. The data form behavioral indices that allow one to track changes in the character and intensity of interactions between individuals, organizations, and states.

Operational forecasting models are characterized by their ability to collect and assimilate substantial data, in near real time, on the character and intensity of behavioral interactions at any level of analysis (individual, organization, state). Their predictive power increases as historical and current data become available. Some operational forecasting models have a proven track record in the context of current operations. However, these models are also limited and have not been used to the fullest extent of their potential. Though we have made some progress in our ability to make point predictions (ABC Model), the operational models are generally useful only for analyzing and forecasting trends in behavioral interactions (FORECITE). These models do not yet facilitate meaningful course of action assessments. They fail to provide rigorous insights into causes and effects of instability and require manual adaptation to system perturbations.

Gaps and Recommendations

The forecasting working group identified several gaps between what decision makers and planners need and what forecasting approaches are currently able to provide. The group centered its recommendations on two general themes: *Analytical support to decision makers* and *the need for greater collaborative relationships*.

ANALYTICAL SUPPORT TO DECISION MAKERS WORKING GROUP

Contemporary approaches to forecasting instability do not currently support robust

course of action assessments. This is in some measure attributable to a lack of data; the data we need are not being collected, or are simply not available for use by the analysts who need them. Toward that end, we offer the following recommendations:

- Put greater emphasis on integrating and sharing data, especially on an interagency basis.
- Collect new data, with greater emphasis placed on sub-national level indicators. We know a great deal about which national-level conditions are portents of national-level instability. If we could collect data on these same factors, more frequently and at the local or provincial level, we could forecast the timing and location of instability with greater precision.
- Increase emphasis on transnational actors. Academics, US government agencies (Census Bureau), and International Government Agencies (The World Bank) have compiled extensive time series indicators that describe characteristics of countries. These data have been instrumental in developing national-level forecasting models. We lack comparable levels of analysis other than the nation-state (like terrorist groups).
- Fully automate the collection and tagging of event data and event antecedents. Currently, those few analysts who have time to do it manually generate much of the most useful dynamic behavioral indicators. The lack of human resources devoted to developing and managing these data collections limits their geographic and temporal scope. We have made tremendous progress in our ability to use natural language parsing capabilities to automatically collect these data with the same accuracy as human beings. However, we need to provide greater funding to projects that have demonstrated this ability.

Collaborative Relationships

- **Between government and academia.** Currently, instability forecasting models rely on data collected primarily by university-based political scientists for their own purposes. To the extent that the government relies on these data for its instability forecasting models, it needs to provide more funding to keep them current. We also need to encourage greater participation of university-based scholars in forums such as MORS, especially those from the "non-traditional" ORSA fields

(like political science and sociology).

- **Between the ORSA and Intelligence communities.** Forecasting stability requires both intelligence and ORSA skills. However, there is very little meaningful collaboration, mutual understanding, or appreciation within these communities for what the other does. Both communities could benefit from the development of forums for fostering greater collaboration and understanding between the intelligence and ORSA communities.
- **Interagency.** Several government agencies—like the State Department, US Agency for International Development (USAID), Department of Defense (DoD), and Central Intelligence Agency (CIA)—have similar missions with respect to crisis early warning. Their research and development programs are highly redundant and there is little formal interagency collaboration to coordinate these efforts. This results in wasted resources and retards the incremental advancement of the state of the art in forecasting instability. We should strive to establish an interagency task force for early warning to coordinate these efforts.
- **International.** Finally, the forecasting working group noted that there is a great deal of interesting work being done in this area by allied and friendly countries, such as the UK, Switzerland, Germany, and Sweden. Though structures exist to exchange information, few mechanisms exist to facilitate meaningful collaboration.

ANALYTIC SUPPORT TO STABILITY AND TRANSITION OPERATIONS WORKING GROUP

The stability and transition operations working group emphasized the fact that different types of "Phase IV" analyses are needed at different levels. Inside the Beltway at the Service headquarters and Joint Staff level, analysis should be involved with determining the appropriate force level and force structure for stability and transition operations. At the Combatant Command level, analysts must appreciate and highlight the impact that courses of action in one phase could have on courses of action in another phase. A wide range of models exists to support and evaluate stability and transition operations. The diverse analytic requirements of these operations are such

that no single model can meet all of them.

It is important to understand the ramp-down of decisive operations and the ramp-up of stability and transition operations. Stability operations are the link between decisive and transition operations. Still, the analyst and the commander will be using decisive operations EEAs and measure of effectiveness (MOEs) concurrently with transition operations MOEs. It is difficult to determine when one phase ends and another begins.

It is critical to synchronize quantifiable elements of national power including Host State objectives and Intergovernmental Organization (IGO) and Nongovernmental Organization (NGO) objectives. The commander will be well served if analysis describing the success or failure to support these organizations is conducted. At the same time, the IGOs and NGOs need to understand that they will have to adapt to be relevant. The same is true regarding host nation support. Too often analysis is conducted concerning the US or coalition capabilities, but the host nation capabilities are overlooked. We must develop a joint analytic doctrine to mutually support both the warfighter and non-military organizations.

The relationship the analyst builds with the decision makers is critical. Deployed analysts are of great value. We as a community must better describe what we can bring to the table for the other elements of the staff.

Additionally, the culture of analysis on peace operations does not exist outside of the military as it does within the military. In OIF, there has been little communication between analysts supporting the civilian leadership and military leadership.

Working Group Recommendations

The stability and transition operations working group made the following recommendations:

- Analysts in support of stability and transition operations, especially those who are deployed, should be highly skilled in the management of data, VBA, and the presentation of information;
- A process should be developed to familiarize deploying analysts with the experiences of analysts who have recently deployed, and to enhance reach-back capabilities to organizations across the analytic community;

(See *WORKSHOP*, p. 34)

WORKSHOP

(continued from p. 33)

- Better inform senior decision makers about ORSA capabilities;
- Develop a joint analytic doctrine to support both military and non-military organizations and facilitate stability and transition operations analysis efforts between military commands, non-military agencies and the host nation; and
- Initiate a dialogue with analysts in other governmental agencies to integrate their capabilities in stability and transition operations analysis.

GWOT ANALYTIC RESOURCES WORKING GROUP

This working group focused on assessing current and emerging analytic tools pertinent to GWOT analysis. Figure 1 (on page 31) shows a potential assessment framework that the group brainstormed after initial attempts to bin tools into a more traditional strategic/operational/tactical frame-work. The working group was divided into two subgroups – technologist's viewpoint and end user's viewpoint. The technologist subgroup came up with 14 questions that the tools should address:

1. Where and when are terrorists likely to attack?
2. Who are the terrorists?
3. How are terrorists funded (locate and model funding streams)?
4. How are terrorists resourced (locate and model resource streams)?
5. What effects will actions taken against terrorists have?
6. What impact will a "war of ideas" have at home and abroad?
7. How do we detect and counter deception?
8. How do we support planning, execution monitoring and assessment?
9. How do we support creating strategy and objectives?
10. How do we do adversary modeling?
11. How do we construct the social network of parent organizations?
12. How do we identify individual terrorist to kill?
13. What is the nature of GWOT?
14. What metrics do we need to develop?

The end user subgroup came up with five areas that are of interest to users:

1. Who are, or will be, the terrorists?
2. What is the type of terrorism?

3. What is the scale of terrorism?
4. What will be the impact of proposed blue actions?
5. What blue actions are recommended?

Observations

- The group agreed that the quality of the analyst is more important than the quality of the tools.
- Tools such as geographical information systems (GIS), visualization tools, and collaborative environments can be invaluable. Similarly, tools that reduce data management time free up the analyst to concentrate on actual analysis.
- Tool quality and characteristics varies widely.
- Combinations of tools and collaboration/reachback will be needed.
- Traditional OR tools will be useful for GWOT, but we need some new ones as well. The major gaps appear to be at the application level, rather than at the methodology level.
- We need to take a broader viewpoint with respect to GWOT than we have in past conflicts. Other communities are involved and other communities can help with analytic resources.

The group is in the process of preparing a database of GWOT-relevant tools and resources (data, tools, and people) that will be available to the community. The database currently has some 100 entries.

METRICS WORKING GROUP

This working group attempted to develop metrics to measure military effectiveness in the GWOT. In general, metrics can be established relative to three basic areas: Ends, Ways, and Means. "Ends" metrics measure progress relative to a stated objective; "Ways" metrics measure the level of activity targeted at, or thought to support, the attainment of a stated objective; and "Means" metrics measure levels of resources dedicated to or expended in support of those activities.

The group used the following Military Strategic Objectives (MSO) as defined in the National Military Strategic Plan for the War on Terrorism:

- Establish conditions that counter ideological support for terrorism
- Defeat terrorists and their organizations
- Deny terrorists the resources they need to operate and survive

- Enable partner nations to counter terrorists
- Persuade, coerce, and when necessary, compel states and non-states to cease support for terrorists
- Deny WMD/E proliferation, recover and eliminate uncontrolled materials, and maintain capacity for consequence management

The group made significant progress and identified several dozen metrics that could provide insight on whether DoD is achieving the MSOs. These metrics have been provided to J5. While time did not allow the group to identify metrics relating to specific military activities, the group did develop generic metrics to relate measures of military activities to approved endstate metrics. Since the military activities vary by area of responsibility, it may be more effective for the joint staff to task the COCOMs to report activity levels that they believe have the best chance of positively affecting the MSO metrics. Then, COCOM levels of activity ("Ways") can be measured, correlated and adjusted to see how they affect respective MSOs. Finally, resource expenditures ("Means") can be programmed and measured by the respective services to determine the costs associated with obtaining any MSO.

Areas for Future Emphasis

While this working group made good progress toward defining an initial set of objective measures from which we can track progress in the GWOT, much remains to be done. Among the areas that require emphasis:

- Fix responsibility for data collection. Much of this responsibility will lie outside of DoD.
- One focus of the GWOT is the "hearts and minds" of the people we are assisting and combating. OR techniques within the areas of civil affairs and information warfare need to be developed. A good way to start would be to form more partnerships with these communities in our common efforts in the War on Terror. In particular, within the working group there was a large distrust of the accuracy of current polling methods.
- At some point in monitoring GWOT progress, human judgment becomes necessary. The linkages between many of the identified metrics have not been explored and are probably a ripe area for the devel-

opment of tools and approaches to evaluate alternative courses of action. The working group did not feel that weighted scoring approaches would be sufficient to adequately address this need.

CONCLUDING REMARKS FROM THE SYNTHESIS GROUP

The goal of the GWOT workshop was to provide a forum for discussing analytic support, tools, metrics, and to gain insight on operational assessment techniques and capabilities to better support the GWOT. On that basis, this was a very successful workshop.

General Observations

The Global War on Terror presents the Western world with a tremendous challenge. We are confronted with an insurgency within Islam. All working groups recognize that our fight is not against the Islamic Religion, but with extremists within Islam. However, although each working group generally agrees that our fight is not against Islam, they often use words that make it sound like it is. The enemy conducts operations against the globalization of western values and influence. This makes its potential targets very large. Counter operations are difficult to conduct because the terrorist threat is not hierarchical in nature. It is a collection of loosely networked cells that act independent of each other and any chain of command. Further, weapons of mass destruction and disruptive technologies magnify the risk to our populace and way of life.

The effectiveness of operations conducted in this conflict is difficult to assess because of its breadth. It is far easier for us to assess the impact of a particular operation than to determine that operation's impact on the global war. Yet, we need to think globally. We need to be able to determine the impact of yesterday's battle in Falujah on tomorrow's fight elsewhere. Where are the analyses to determine this impact? Who is thinking globally? Where is the organization that is advising and evaluating the use of national power in this global war? We cannot afford to win the battle but lose the war or lose the peace.

We need to define an endstate for GWOT. How are we going to plot a path to get there if we don't know where *there* is? The GWOT is winnable, but in what sense? Will we be able to fully eliminate it? Is it similar to the War of Poverty or the War on Drugs? It has been said that this is a *War of Gener-*

ations. In our society of instant gratification, short attention spans, "I want it yesterday" mentalities, how will we stay the course?

We need to understand our enemy. This is a fundamental difference between GWOT and the Cold War. At the height of the Cold War, if, for example, you brought a Communist Politico to Wal-Mart, he would be amazed at the wealth of our country and at what an open, free market economy can bring. If you bring a terrorist to Wal-Mart, all he sees is an example of the decadence of the *Great Satan*. We need to understand the centers of gravity of our enemy, and the environment that spawns him and her. And then, based upon these centers of gravity, we need to perform an Intelligence Preparation of the Battlefield. Not a geographical one, but a sociological one for a global campaign plan.

The GWOT will not be won through military power alone. It will require all the elements of our national power. Where do we analyze the application of national power? If the President asks the DoD to solve a problem, he gets a military answer; the State Department, a diplomatic one. Where do we evaluate the apportionment of national power? What are the methodologies, metrics, and tools to assess a little bit of this and some of that?

Our role, as military ORSAs, in the GWOT presents us with some unique and immediate challenges. The DoD is not always the lead in addressing certain challenges. For Homeland Security, civil agencies have the lead and DoD is supporting. For the GWOT, the Department of State has the lead. Where are the ORSAs of the other agencies? What is the venue in which we come together to provide support to our leaders? In what context can we assess our ability to perform in this supporting role?

All the working groups recognized the need for interagency, interdepartmental, and international cooperation and the ability to analyze combined actions. However, stovepipes and the lack of clearly defined responsibilities make this difficult. For example, local law enforcement agencies do not wish to share crime-fighting information because of their "operational security" concerns. We need to break down these stovepipes within our own government.

There is a real concern amongst workshop participants about the increasing need for analysis. There is a need for more analysts within the Combatant Commands and

analysts who understand other department and agency capabilities. If we believe that the Global War on Terror is a fundamentally different war, and a war of generations, what are we, as a MORS community, doing to prepare ourselves? The phenomenology of this war is primarily social, not physical. What are we doing to obtain the necessary social, political, and historical training? Operations Research is a multidisciplinary field. How are we attracting folks with the right backgrounds and expertise into our community?

Overarching Recommendations

- Develop a campaign analysis plan for the Global War on Terror - one that is globally strategic, cross-community, and considers all the elements of national power of the US and our allies.
- Identify and analyze the centers of gravity of our enemy. Use this as a basis to build the campaign analysis plan.
- Plan for the long term. GWOT will likely be generations in length; build the analyses plan accordingly.
- Make a conscious effort to expand the pool of ORSA talent and make it more interdisciplinary with the social sciences.
- Finally, facilitate the coordination of analyses across the government to be able to analyze the use of national power.

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**The Global War on Terrorism: Analytical
Support, Tools, and Metrics of
Assessment**

**Working Group 1: Forecasting Nation-State
and Regional Instability**

*30 November - 2 December 2004
US Naval War College
Newport, Rhode Island*

Purpose

- 1. Identify and review analytical approaches, tools, and models for forecasting national and regional instability**
 - 2. Identify analyst and decision maker informational requirements at various phases of operation (no intervention, intervention, post-intervention)**
 - 3. Identify gaps between what analysts and decision makers NEED and what current approaches, tools, and models currently provide**
 - 4. Recommend ways ahead to fill these gaps**
-

These are the four objectives of Working Group 1 (Forecasting Nation-state and Regional Instability).

Scope

**Assessed the informational requirements of
two different sets of analytical consumers at
different levels of analysis**



We began by identifying the analysts, planners and decision makers that require early warning insights. We placed them in one of two categories depending on whether they had a strategic or operational perspective.

Strategic Forecasting

- OSD (policy), NSC, Joint Staff (J5 Strategy) COCOMs, State, USAID, and Coalition partners
 - Long-term perspective (5-20 years)
 - Draw “insights” from multiple sources using multiple methods
 - Need to know what form instability will take (e.g., civil war, inter-state war, revolution, coups, social unrest, economic disruption)
 - Decision makers emphasize the importance of identifying causal factors associated with instability — need to identify key drivers
 - Need to provide course of action assessment
 - ◆ No matter how accurate the underlying analysis/model, if it is not accompanied with an assessment of alternative policy options, it is of questionable relevance
 - ◆ Use as a basis for making long-term policy and resource decisions
-

Strategic analysts and planners have a long-term perspective (5-20 years), draw insights from multiple products, generally need to know what form instability will take (i.e., war, economic crisis, social unrest), and emphasize the need to determine cause-effect relationships in order to identify the policy-relevant drivers of instability. Participants were unanimous in thinking that any relevant forecasting approach **MUST** support a course of action assessment; no matter how precise an underlying forecast, if it is not accompanied with an assessment of alternative policy options, it is of questionable relevance.

Operational Forecasting

- Short-term perspective (days to weeks)*
- Need the RIGHT advice NOW
- Timing and location of forecasted adverse actions is critical
- Draws insights from multiple products
- Short-term HARD resource decisions
- Need to measure and monitor effectiveness
- Analyst needs close proximity to the decision maker and staff (need to be integral part of team)

*(vary depending on proximity to intervention)

Operational analysts and planners generally take a short-term perspective, seeking insights into phenomena that will occur over the next few days, weeks, and in some cases months. Because of the short time horizon, operators need the *right* advice *now*. As a result, it is critically important that the analyst be imbedded in close proximity to the decision maker and his staff. The timing and location of impending instability needs to be specified with precision in order for the operational planner to efficiently and effectively allocate hard resources.

“Models” to Conduct Assessments

Strategic Forecasting Models

- Most are macro-structural in orientation
- Forecast the likelihood of country instability and state failure 2-15 years in advance given historical relationships (and future forecasts) of broad macro-structural trends in social, demographic, political, and economic factors

◆ Examples

- CIA Political Instability Task Force (aka, State Failure)
- CAA's ACTOR

Operational Forecasting Models

- Capabilities to monitor, assess, and forecast trends in dynamic behavioral interactions between people, organizations, and states

◆ Examples

- Psynapse Technologies' ABC terrorism prediction model
- CAA's FORECITE Monitor
- Georgia Institute of Technologies' Harbingers of Conflict Program

We examined several instability forecasting models to determine how they measured up to these requirements. We placed these models into one of two categories depending on whether they provided strategic or operational insights.

Strategic forecasting models are macro-structural in their orientation. They forecast the likelihood that states will fail or will become unstable from 2 to 15 years in advance. The forecasts are based on statistical analyses of the historical relationships between instability and macro-structural trends in social, political, demographic and economic factors. Examples include: the CIA Political Instability Task Force (aka, State Failure Task Force) and the Center for Army Analysis' ACTOR (Analyzing Complex Threats for Operations and Readiness) model.

Operational forecasting models consist of capabilities that monitor, assess, and forecast trends in dynamic behavioral interactions between people, organizations, and states.

Examples include:

- ABC Terrorism Prediction Model (Psynapse Technologies). This model, which has been operational for several years, searches through textual reports for antecedents or precursors to terrorist attacks. Using neural networks, the model can estimate the timing, target, and consequences of a terrorist attack (within the context of a protracted campaign) with about 85% overall accuracy.
- Center for Army Analysis' FORECITE Monitor. Collects data (in near real time) on *who is doing what to whom, when, where and how* around the world. The data form behavioral indices that allow one to track changes in the character and intensity of interactions between individuals, organizations, and states.

Evaluation -- Current Strategic Forecasting Models



• Strengths

- ◆ Provide accurate, global, systematic analyses of structural conditions conducive to instability
- ◆ Provide insight into which countries are likely to become more or less stable in the coming years, given trends in their underlying conditions
- ◆ Identify the relevant conditions on a country-specific basis that, if altered, could enhance (or further undermine) national stability

• Limitations

- ◆ ONLY provide general risk propensities FOR COUNTRIES at the national level on an annual basis
 - No insights provided into the specific timing, nature, and specific (sub-national) location of triggering events
 - ◆ Based on correlation and pattern recognition of conditions — cannot identify dynamic causal chains
 - Cannot “predict” triggers or relevant internal dynamics years in advance
 - ◆ Beyond vague generalizations, do not (and cannot) provide compelling, actionable, course of action analysis
-

We then evaluated the **strengths and limitations** of these models. The **strengths of the strategic models** include the following:

- They provide accurate, global, systematic analyses of structural conditions conducive to instability.
- They provide insights into which countries are likely to become more or less stable in the coming years given trends in their underlying conditions.
- They identify the relevant conditions on a country-specific basis that, if altered, could enhance (or further undermine) national stability.

Limitations of the strategic forecasting models included the following:

- They only provide general risk propensities for countries at the national level on an annual basis. As a result, they provide no insights into the specific timing, nature, and location of events that might trigger instability.
- They are based on correlations between broad conditions and instability. As a result, they cannot identify dynamic causal chains.
- Beyond vague generalizations, these models do not (and cannot) provide compelling, actionable, course of action analyses.

Evaluation -- Current Operational Forecasting Models



• Strengths

- ◆ Collect and assimilate data in near real time on the character and intensity of behavioral interactions at any level of analysis (individual, organization, state)
- ◆ Predictive power increases as historical and current data become available
- ◆ Some models have a proven track record in the context of current operations

• Limitations

- ◆ Some progress in making point predictions (ABC Model), but generally useful only for analyzing and forecasting behavioral trends (FORECITE)
 - ◆ Do not yet facilitate course of action analysis
 - ◆ Do not provide cause and effect analysis
 - ◆ Require manual adaptation to system perturbation
 - ◆ Have not been used to the fullest extent of their potential
-

We identified the following **strengths in the operational models**:

- Their ability to collect and assimilate substantial data, in near real time, on the character and intensity of behavioral interactions at any level of analysis (individual, organization, state)
- Their predictive power increases as historical and current data become available.
- Some models have a proven track record in the context of current operations.

However, we also noted the following **limitations**:

- Though we have made some progress in our ability to make point predictions (ABC Model), the operational models are generally useful only for analyzing and forecasting trends in behavioral interactions (FORECITE).
- These models do not yet facilitate meaningful course of action assessments.
- They do not provide rigorous insights into cause and effect of instability.
- They require manual adaptation to system perturbations.
- Nevertheless, they have not been used to the fullest extent of their potential.

Gaps and Recommendations (Analytical Support)



• Analytical Support to Decision Makers

- ◆ Data collection and availability
 - ◆ Current approaches fail to address courses of action
 - ◆ **Recommendations**
 - Integrate/share existing data
 - Collect new data--increase emphasis on sub-national level indicators
 - Increase emphasis on transnational actors
 - Fully automate the collection and tagging of event data and event antecedents
 - Greater use of experimentation in the short-term to illuminate cause and effect relationships.
-

We identified several gaps between what decision makers and planners need and what forecasting approaches are currently able to provide. We centered our recommendations on two general themes: *Analytical support to decision makers* and *the need for greater collaborative relationships*.

Analytical Support to Decision Makers

Current forecasting approaches do not currently support robust course of action assessments. This is in some measure attributable to a lack of data; the data we need are not being collected, or are simply not available for use by the analysts who need them for forecasting. We, therefore, offer the following recommendations.

Greater emphasis on integrating and sharing data, especially on a cross-agency basis

Collecting new data, with greater emphasis placed on sub-national level indicators. We know a great deal about which national-level conditions are portents of national-level instability. If we could collect data on these same factors, more frequently and at the local or provincial level, we could forecast the timing and location of instability with greater precision.

Increase emphasis on transnational actors. Academics, US government agencies (Census Bureau), and International Government Agencies (The World Bank) have compiled extensive time series indicators that describe characteristics of countries. These data have been instrumental in developing national-level forecasting models. We lack comparable data for units of analyses other than the nation-state (like terrorist groups).

Fully automate the collection and tagging of event data and event antecedents. Currently, those few analysts who have time to do it generate much of the most useful dynamic behavioral indicators manually. The lack of human resources devoted to developing and managing these data collections limits their geographic and temporal scope. We have made tremendous progress in our ability to use natural language parsing capabilities to automatically collect these data with the same accuracy as human beings. However, we need to provide greater funding to projects that have demonstrated this ability.

Gaps and Recommendations (Collaborative Relationships 1)



- **Between Government and Academia**

- ◆ Currently, forecasting capabilities rely on data collected by the academic community for their own purposes
- ◆ **Recommendations**
 - Greater government funding for academic data collections
 - Provide additional forums and encourage greater participation of academics from "non-traditional" ORSA fields (political science)

- **Interagency (ORSA and Intelligence)**

- ◆ Forecasting requires intelligence analyst and ORSA skills
 - Very little collaboration, mutual understanding, or appreciation across these communities
 - "Data", "analysis" and "validation" mean different things to the intelligence and ORSA communities
- ◆ **Recommendations**
 - ORSAs need to be intelligence analysts and intelligence analysts need ORSA skills
 - Greater embedding of ORSAs within intelligence schools
 - Might require outreach between the two communities

Collaborative Relationships

Between government and academia. Currently, instability forecasting models rely on data collected primarily by university-based political scientists for their own purposes. Due to a lack of funding, these data sets sometimes are not updated for 5 or 10 years, which limits their ability to be used in forecasting models.

- **Recommendation:** To the extent that the government relies on these data for its instability forecasting models, it needs to provide more funding to keep them current. We also need to encourage greater participation of university-based scholars in forums such as MORS, especially those from the "non-traditional" ORSA fields (like political science and sociology).

Between the ORSA and Intelligence communities. Forecasting stability requires both intelligence and ORSA skills. However, there is very little meaningful collaboration, mutual understanding, or appreciation within these communities for what the other does. Even the words *data*, *analysis*, and *validation* mean very different things to the ORSA and intelligence analyst.

- **Recommendation:** ORSAs need to be intelligence analysts and intelligence analysts need some ORSA skills. Both could benefit from the development of forums for fostering greater collaboration and understanding between the intelligence and ORSA communities. Such forums could lead to the introduction of an "ORSA-type" curriculum within the intelligence schools.

Gaps and Recommendations (Collaborative Relationships 2)



• Interagency (Overall)

- ◆ Different agencies have similar missions
 - State, USAID, DoD, CIA are all perusing some kind of early warning program
 - Lots of duplication, VERY little analytical collaboration (NIH?)
 - Results in wasted resources
 - Retards incremental advancement of the state of the art
- ◆ **Recommendation**
 - Develop an interagency task force for early warning to coordinate efforts

• International

- ◆ Lots of interesting work being done by allied and friendly countries (UK, Sweden, Switzerland, Germany)
 - ◆ Structures exist to "exchange" information, but few mechanisms exist to facilitate meaningful collaboration
-

Interagency (overall). Several government agencies—like the State Department, US Agency for International Development (USAID), DoD, and CIA—have similar missions with respect to crisis early warning. Their research and development programs are highly duplicative and there is very little formal inter-agency collaboration to coordinate these efforts. This results in wasted resources and retards the incremental advancement of the state of the art in forecasting instability.

- **Recommendation:** Develop an interagency task force for early warning to coordinate these efforts.

International. Finally, we noted that there is a lot of interesting work being done in this area by allied and friendly countries, such as the UK, Switzerland, Germany, and Sweden. Though structures exist to "exchange" information, few mechanisms exist to facilitate meaningful collaboration.

The Global War on Terrorism: Analytical Support, Tools, and Metrics of Assessment

Working Group 2: Analytic Support to Phase IV Operations

*30 November - 2 December 2004
US Naval War College
Newport, Rhode Island*

Working Group 2: Analytical Support to Phase IV Operations, was chaired by Dr. Karsten Engelmann, from the Center for Army Analysis (CAA). The co-chairs were MAJ Robert Kewley, CAA, MAJ Andy Farnser, Army QDR office, and Mr. Steve Stephens, Marine Corps Studies and Analysis. The working group was well attend, with up to 30 individuals from government and industry. The attendees were divided evenly between uniform and non-uniform personnel. One interesting aspect of the group is the great number of formerly deployed individuals, as well as deploying individuals.

WG 2 Chairs and Co-Chairs

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WG 2 Agenda

- Overview
 - Working group objectives
 - Conclusions
 - Recommendations
 - Future workshops
-

Overview

WG 2 Assignment (from MORS)

- **Each working group will present**

- ◆ A recommended analysis approach for each of their topics, including a course of action for implementing the approach
 - ◆ These suggested approaches will identify current tools, models, methods and metrics that may be used in assessing the effectiveness of the GWOT
 - For example; how successful are we at disrupting the financial flows of terrorist organizations? How do we measure the progress of stability operations?
 - ◆ This will provide a basis for building a library of appropriate assessment tools
 - ◆ Further, recommendations for future workshops and working group meetings that will concentrate on specific areas will be proposed for Sponsor consideration
-

WG 2 Overview

- **Focus Areas**

- ◆ The transition from major combat operations (MCO) to counter-terrorism and counter insurgency
- ◆ Supporting a political process that is both appropriate to the region and culture that enhances security
- ◆ Predicting the actions of global terrorists in the nation or region after major combat operations and after the US has withdrawn
- ◆ Predicting what kind of actions during Phase II and III will best support Phase IV operations after Phase III

- **Objectives (what we accomplished)**

- ◆ Identify the over-lap area between Phase II and III and Phase IV Operations
 - ◆ Identify how analysts can better serve decision makers during Phase IV Operations
 - ◆ Identify applicable models and tools
-

The focus areas were only tangentially touched on. The main emphasis was the objectives. The group overall felt that the focus areas were appropriate. The one exception was that additional time and emphasis should be placed on the interaction between the military and the other elements of power. This is especially true when dealing with non-governmental organizations and inter-governmental organizations.

Overall, the military is able to bring assets to the "show" that the other organizations interested in alleviating conflict and the problems caused by conflict, are unable to. For example, the military is able to bring far more, and better equipped security forces to a re-construction (Phase IV) effort than IGOs/NGOs/PVOs are able to. Additionally, the military, through its inherent capabilities, brings some limited construction capability to the re-construction effort. Another very strong area that the military is able to assist in is the establishment of communications, and the ability to coordinate the disparate organizations involved in the reconstruction effort. This is facilitated by the strong management skills that senior (and even junior) officers have. Other areas where the military is ideal for Phase IV operations is in the training of security forces to enable the host nation to take over the defense of their own country. Finally, because of its structure, the military is often the best choice for the creation of a separate, specialized Phase IV headquarters under which the Inter-governmental organizations (IGOs), Non-governmental organizations (NGOs) and Private Venture Organizations (PVOs) may operate.

Thus, it could be argued that this list of objectives needs to be expanded...and the focus area needs to be taken off of the military and onto the other elements of power. To accomplish this, we will need to be inclusive of other organizations (state, IGOs, NGOs, PVOs) and their analytical capabilities. An inter-agency analytical huddle similar to this MORS workshop is necessary, and should include not only DoD, but also other governmental representation, and even non-governmental representation.

Comments on Plenary Sessions as They Pertain to WG 2



- How to present analysis to the decision maker
 - Facing a global counter-insurgency campaign
 - Not getting at the root cause
 - The Strategic Goal: 4 D's
 - Establish the relationships
 - Suggest alternatives
 - Model on a strategic world-wide basis
 - Is the cost-benefit ratio against us?
 - Are we winning or losing?
 - Inter-agency cooperation is at an all time-low
-

The plenary speakers presented a number of points that are cognizant with respect to the WG 2 objectives. GEN Downing (ret) asked the question of how we are going to get at the root causes of the underlying conditions that enable the international and state sanctuaries to exist that are supporting terrorist organizations and their leadership. He mentioned the 4 D's of strategic goals: Defend, defeat, deny, and diminish. We need to be able to analyze how successful we are in diminishing the underlying conditions, denying international and state sanctuaries, and finally defeating the terrorist organizations and its leadership. GEN Downing (ret) emphasized the importance of presenting analysis to the decision maker. This, of course, is the most important aspect of analysis. Analysis that is not presented in a concise manner to a decision maker does not help the decision maker. Furthermore, an analyst that does not win the trust of the decision maker will be unable to make an impact on the decision maker's actions. This leads into an idea that will be explored later – the competency of the analyst. A competent analyst must not only be able to produce analytically rigorous products, but must also be able to present those products in a convincing manner that enables the decision maker to act on the ideas presented.

War on terrorism is a war on a tactic – and declaring war on a tactic is hazy. We are facing a global war not on terrorism...but on terrorists – insurgents within Islam.

Levels and Geographical Places of Phase IV Analysis



- **Multiple locations and types of analysis**
 - ◆ Beltway type of analysis
 - What forces do you need to accomplish a mission? Size and skill sets
 - What skill sets do analysts need to support the combatant commanders?
 - What tools do we need to build?
 - ◆ At the COCOM level
 - Analysis to support planning (Phase I, II, III and IV)
 - Analysis to support course of action (Phase I effects II, III, etc.)
 - ◆ In the field with the commander
 - Assessment and combat assessment
 - How well are we doing, or how poorly are we doing
 - **What analysis are IGO/NGO/PVOs conducting?**
-

Different types of Phase IV analyses are needed at different levels. Inside the Beltway at the Service headquarters and Joint Staff level, Phase IV analysis should be involved with determining the appropriate force level and force structure for Phase IV analysis. This type of analysis would include determining types and amounts of skill sets needed. In addition, this type of analysis could include determining equipment requirements for Phase IV operations. This type of analysis could impact program development.

At the Combatant Command level, analysis could be used to support the planning process of operations from Phase 0 all the way through Phase IV and highlight the impact that courses of action in one phase could have on courses of action in another phase.

At the Joint Task Force level and below, Phase IV analysis is needed for assessment and decision support. Logistics analysis is as critical in Phase IV as in the other phases and may be more so.

Working Group Objectives

Identify the overlap area between Phase II and III and Phase IV Operations

● Summary

- ◆ Identify the questions that need to be asked about Phase IV and applied to Phase III. Need to be able to explain the "so what's" from Phase IV analysis to Phase III analytical efforts
 - Phase III and Phase IV are often simultaneous operations
 - Need to be analytically involved from the beginning (Phase 0?)
- ◆ Analysis occurs pre-campaign at Beltway level for planning and force structure development
- ◆ Need to make sure non-military organizations understand military lingo and vice-versa
- ◆ Provide the means for good force planning for Phase IV. It needs to be simple to use and understand

Important to discover and understand the ramp-down of Phase III and the ramp-up of Phase IV operations. Stability operations are the link between Phase III and Phase IV. Still, the analyst and the commander will be using Phase III EEAs and MOEs along with the Phase IV MOEs. There is a lot of overlap between the two. In fact, it is difficult to determine when Phase III ends and when Phase IV begins. It can be argued that a new phase-less approach needs to be identified. As was pointed out by Dr. Rose, the end states need to be well defined. This can be difficult because an end state for a phase may be declared (as in Iraq), but the campaign may slip back. There probably needs to be triggers to determine when we move from Phase III to Phase IV. We need to develop a joint analytic doctrine to support the war fighter and non-military organizations both.

One important element is the matter of intelligence, as COL(P) Keller pointed out, we need to spend less time in the intelligence cycle on managing information and commensurately more time on analyzing information. This is true for Phase III analysis as well as Phase IV. The question remains, are the informational elements appropriate for Phase III also for Phase IV? How do Intelligence and Intelligence gathering systems change from Phase III to Phase IV. What resources change from Phase III to Phase IV. This needs to be identified and understood. For example how does the troop to task change over time as you change phases. We don't need a huge model to generate the results. How do we make choices. What higher level subjects would be useful.

Identify the over-lap area between Phase II and III and Phase IV Operations

• Important Elements

- ◆ Need tools that synchronize quantifiable elements of national power (DIME). These include
 - Host State objectives and Interests
 - Commander(s)' priorities/top ten
 - Coalition members objectives and red lines
 - Inter-governmental Organization/Nongovernmental Organization objectives (how to include them into the evaluation process)
- ◆ Information operations – conducted in Phase III, but often shows up in Phase IV. Content analysis and polling

One issue that needs to be addressed is the need to synchronize quantifiable elements of national power including Host State objectives and Inter-governmental Organization and Nongovernmental Organization (IGO/NGO) objectives. The commander will be well served if analysis describing the success or failure to support these organizations is conducted. At the same time, the IGOs/NGOs need to understand that they will have to adapt to be relevant. Their sometimes reluctance regarding working with the military will need to be reduced...and greater ties between the two groups established. The same is true regarding host nation support. Too often analysis is conducted concerning the US or Coalition capabilities, but not taking into consideration the host nation capabilities...and if those capabilities are increasing or decreasing. It is understood that data gathering on these organizations is, at best, difficult.

Analysis support during the planning for and conduct of Phase II operations and Phase III operations could indicate impacts on Phase IV operations. Analyses supporting Information operations would be very useful, but there is not much analysis done pertaining to Information Operations (IO). More needs to be done analyzing IO not just for Phase IV, but also for the preceding phases and their eventual impact on Phase IV IO and Phase IV operations in general. It is critical that information operations are consistent throughout all phases.

Identify What Needs to be Done to Better Serve Decision Makers During Phase IV Operations



• Summary

- ◆ Understand decision maker's objectives and priorities
- ◆ Assist the decision maker in determining progress towards the end-state and resource allocation to meet prioritized goals
- ◆ Understand data requirements Phase IV operations

• Important Elements

- ◆ Need for measures that are scalable between levels of command (tactical, operational, strategic, national)

We need to ensure that we not only have the analysis but also the recommendations for the commander and explanations for the commander. We need to understand the commander's plan. However, what do we do in situations where the commander may not have a plan, or a plan that changes over time? The analyst needs to continue to be flexible, and be willing to take sucking chest wounds bringing analysis to the commander. The commander is not the only decision maker. For example, the chief of staff, as well as the J3 or G3.

Analysis to support Phase IV planning begins with the analysis to support Phase I planning. The analysis to support selection of courses of action for Phase II planning and Phase III planning should incorporate the effect of Phase II operations and Phase III operations on Phase IV operations. Analysis can simulate alternative exit criteria for Phase IV. There is a Maslow Hierarchy type of structure that is characteristic of Phase IV operations that can be exploited by analysis. Numbers that are derived subjectively in the analysis process should not be presented to the decision maker in numerical format. A 'stoplight' presentation should be used with strong textual support for assessments.

Identify Appropriate Models and Tools



• Summary

- ◆ Due to the diversity of Phase IV operations, no single model can be a panacea for analytical support to Phase IV operations (a family of models is needed)
- ◆ Wars like WWII (and the occupation of states in the aftermath) are not primary reference for modern peacekeeping
- ◆ Doctrine for assessment will aid in tool development, utility, and analyst preparation
- ◆ We need a model to prioritize how resources are spent
- ◆ We need to transition from measuring completion of tasks, to achievement of objectives (effects based measurement)
- ◆ Linear combinations of output metrics can be subjective and mask the importance of dependencies. However, the analyst may not have the opportunity to present complex analysis
- ◆ Influence diagrams, decision analysis, spread-sheet tools, GIS; Microsoft Project show great promise
- ◆ Encourage MORS Sponsors to contact the various agencies to find out what tools and requirements they have. The same is true for Coalition members, etc. the US military is not the only organization with tools that can support Phase IV

A model as defined here is a mathematical or otherwise logically rigorous representation of a system or a system's behavior – in this case combat and non-combat operations. A model can be used as a shorthand form of communication that simplifies, emulates, or scales some aspect of the real system in order to enable the simulation. The difficulty for analysts is how to select optimal simplifying assumptions, especially when improving upon or modifying models to ensure the best use of resources and to prevent the models and analysts from being overwhelmed by the amount of data generated. This is especially true when dealing with models in support of Phase IV operations

WWII is not a relevant model for Phase IV operations. There are too many differences for a valid comparison with today. WWII was total war with unconditional surrender. For example, Dresden Germany was totally destroyed by allied bombing. In fact, the amount of war damage remaining in 1991 was greater than the amount of war damage in Baghdad in 2003. One out of every seven faces in post-War Germany was an Allied face. There is no way that the United States has the ability to mobilize and put this many boots on the ground.

A wide range of models exist to support and evaluate Phase IV operations. The analytical requirements of Phase IV are such that no single model can meet all of them.

Models and Tools

• Important Elements

- ◆ The analyst is **THE** most important tool
 - In general, the OR community needs improvement in the analytic skills required for Phase IV operations
- ◆ Agreement within community on the terminology for Phase IV operations
- ◆ Tools should support “spread-sheet” deep analysis. Simple to use, and easy to explain the results
- ◆ Spatial-analysis tools are critical to Phase IV operations
- ◆ Commercial Off The Shelf – Good graphics
- ◆ Reach-back to organizations with “more-powerful” tools is necessary and desirable

Tools are important, but not essential to analysis. The analyst himself is the most important tool. Every combat analyst is an analyst. Every analyst, however, cannot be a combat analyst. A difficulty we have is that in general, all of our military Services are deficient in the skills required for Phase IV operations.

Given that, the selection of what goes into the analyst's tool box is a function of the analyst. They should be tools the analyst knows and is familiar with. During a deployment is not the time and place to learn new tools. Simplistic tools also play a special role to the analyst. Not only do simple tools allow rapid analysis, critical to real-time analysis, but the results created are often presented in a more appropriate manner to an information-saturated combat decision maker.

The type of tools required also depend on the type of command supported. An analyst supporting a division-level command will require different tools than one supporting a theater-level command. Not only should the level of the command be considered, but also who within the command an analyst is supporting. This concept is also true with respect to the different services, coalition members, and the IGO/NGO community.

Of special interest are spatial-analysis tools. Spatial analysis is very valuable because commanders already understand sophisticated spatial analysis techniques that create maps. Adding thematic data that represents complex analysis is only one step beyond what the commanders have been trained to understand since being a 1st lieutenant.

Finally, reach-back capability needs to be fully implemented. Deployed analysts need to understand what analytical efforts are better conducted by rear-area organizations with more powerful tools at their disposal. Tools that help to develop or facilitate reach-back are rapidly becoming available, and accessible to the users.

Conclusions and Recommendations

General Conclusions

• **Conclusions**

- ◆ Deployed analyst is an ORSA ambassador
- ◆ There is a profound difference between how the military and civilians view the ends, ways and means and the metrics used to evaluate them
- ◆ Need to improve communications between military and civilian analysts and organizations (e.g., the Iraqi analytical huddles)
- ◆ Reach-back is the analysts force multiplier
- ◆ Bureaucrats are a good thing...

The relationship the analyst builds with the decision makers is decisive. Analytical support is a changing environment. It is also determined by the decision maker — and not all decision makers are the same. We need to better describe what we can bring to the table for the other elements of the staff. Deployed analysts are of great value — better than a power-point chart in explaining to the staff what we can do.

There is a profound difference between how the military looks at analysis and how civilians look at analysis. The culture of analysis on peace operations does not exist outside of the military as it does within the military. In Iraq, there was little or no communication between analysts in support of civilian leadership and military leadership. Most of the analysis was done on the military side, not on the civilian side.

There is a difference between rebuilding infrastructure and rebuilding institutions. Rebuilding infrastructure is constructing schoolhouses. Rebuilding institutions is providing teachers, a curriculum, equipment, and an administration. Rebuilding institutions is for the long haul and involves administration and the personnel cycle of recruiting, training, and developing. The numbers of administrators required is a part of British nation-building doctrine. Trained bureaucrats are necessary to make a country function.

General Recommendations



• Recommendations

- ◆ Further develop the analyst
 - Management of data, VBA, and the presentation of information
 - Capture experience (5 w's) of deployed analyst and use to train other analysts
 - Build a lessons learned web-site for deployed analysts. The tools and the lessons learned (CALL, AFSAA, MORS, JFCOM)
 - Professional school curriculum for all service branches
 - ◆ Inform senior decision makers what ORSA analysts can bring to the decision making process through doctrine, war college, other means
 - ◆ Enhance reach-back capabilities (joint, inter-agency, schoolhouses)
 - ◆ Coordinate Phase IV analysis efforts between commands, services, and agencies
 - ◆ Develop proven and promising tools and models
 - ◆ Improve military-civilian (IGO/NGO) analytical link-up
 - ◆ Need to further develop doctrine for assessment, especially Joint, for analysis
 - ◆ Determine what analysis can be made available to the rest of the world to encourage IGO/NGO/PVO analytical efforts
-

Recommendations for Future Workshops and Working Group Meetings



- Further discussion on analysis support to operations (not necessarily a Phase-specific one)
 - Work directly with deployed analysts – bring the conference to the theater
 - Bring in international contributors (difficulty with classification)
 - Bring in inter-governmental, non-governmental, and private organizations
 - Develop courses to further train the analyst
-

There are several general recommendations as to how to proceed with future workshops. The first is to recognize that this workshop was only a start...or more appropriately, only one stop on the path to analytical nirvana. The success here in Newport is only the beginning. After three days of work, there are more questions that need to be answered. Thus, the first recommendation is to do this again. The majority of individuals would attend again, perhaps in six months, to determine what has been accomplished.

An even more appropriate recommendation is to have a meeting of deployed analysts discuss this issue.

International contribution will also add to the value of the conference. However, it is important to recognize that there is a difficulty in the fact that the international members cannot have access to classified information. Resolving this issue, and obtaining foreign clearances will help to include the critical international community into the problem analysis.

**The Global War on Terrorism: Analytical
Support, Tools, and Metrics of
Assessment**

**Working Group 3: GWOT Analysis Resources
(Tools, Data, People, Methods)**

*30 November - 2 December 2004
US Naval War College
Newport, Rhode Island*

Working Group 3 was charged with investigating the resources needed and available for analysis in the Global War on Terrorism (GWOT). The group determined that these resources include tools, data, people (e.g., subject matter experts), and methods.

Membership

- Hartley, Dr Dean S. III, Chair
 - Cipparone, Mr John S., Co-Chair
 - Allen, Dr Patrick D.
 - Applin, Mr Frank Michael (Mike)
 - Bell, Maj Jason A
 - Brown, LCDR Patrick Shane
 - Carley, Dr Kathleen M.
 - Clark, Capt Clinton R.
 - Cullenbine, Capt Christopher A
 - Fowler, Maj Michael W.
 - Goss, Mr John Benson II
 - Hardy, LCDR Randall C.
 - Herring, Maj David J.
 - Hesser, Mr W. Andrew
 - Hetherington, Capt Cheryl Lynn
 - Hey, Mr William E.
 - Huxtable, Mr Phillip A.
 - Kapos, Mr Ervin
 - Koehler, Mr Matthew Thomas Kristian
 - Kolitz, Mr Stephan E.
 - MacKerrow, Edward
 - McCurdy, Mr Michael L
 - McMullin, Mr James D
 - Panagos, Mr James
 - Pfeiffer, Mr Mark Peter
 - Rose, Dr George
 - Schultz, CDR Johnny L.
 - Sharpe, Mr John
 - Smith, Mr Justin E.
 - Spinetta, Maj Lawrence J.
 - Stigler, Prof Andrew L
 - Vaccaro, Mr James Matthew
 - Vered, Dr Moshe
-

Membership included US, UK, Israeli and Austrian citizens both military and civilians with varied technical expertise.

Process - General



- **Understand terrorism at a rudimentary level**
 - **Receive presentation on several "tools"**
 - ◆ Simulations, models, decision aids: "named things"
 - ◆ Methodologies: potentially useful things
 - ◆ Resources: databases, people, books?
 - **Meta-data on tools**
 - **Develop a spreadsheet of tools (w/meta-data)**
 - **"Evaluate" the tools**
 - ◆ From the Technologist's viewpoint
 - ◆ From the End User's viewpoint
 - **Report out**
-

The first order of business was to reach agreement within the group on a working definition of terrorism. This definition was used to ensure a common basis for making decisions on the various aspects of the group's program.

The tools may be sophisticated computer programs, such as simulations or linear programs; they may be simpler computer programs, such as spreadsheets; or they may be non-computer aids, such as checklists. The data may reside in carefully constructed databases on computers, in less convenient forms on computers, or as hardcopy, such as books and papers. The word "tools" will be used in two ways. Its broader use is as a simple word to describe the various resources used by the analyst in supporting the GWOT. "Tools" in its narrower sense will refer to simulations, models, and decision aids that are sufficiently well-defined to have been given names by their developers.

The principal function of the group was to produce useful information about the tools of GWOT. Some useful things can be said about tools in general; however, most of the value will be in listing available tools and information about those tools (meta-data) and discussing areas that are missing tools. In order to discover that something is missing, one must know what is needed and what is available that might fill the need (the list).

The actual list of tools with the metadata is included as an Excel spreadsheet in Appendix C.

To the extent possible, the group also added an evaluation of some of the tools. Working Group 3 divided itself into two subgroups to produce such an evaluation. One subgroup considered the tools from a technologist's point of view, while the other took the viewpoint of possible end users.

Finally, the group produced this final report.

Difficulty in Defining Terrorism



- Is Terrorism a **tactic** or a **clash of world views**?
 - Do we need to know why terrorists are terrorists from a "tool" evaluation point of view?
 - **Clash of World Views:** implies a need for careful examination of culture(s) of terrorists for clues to the solutions
 - **Tactic:** implies a need to consider whether the acceptance of the tactic is culture-specific or general within human nature and how that acceptance might spread or retreat
 - These two points imply that we need to understand the social landscape of terrorism to ensure that the correct tools exist and that the tools perform as needed
-

Difficulty in Defining a Terrorism Event



- **By Effect:** cultural definition (e.g., is killing all bugs terrorism? Was fire bombing Dresden terrorism?)
- **By Intent:** cause terror (in the mind of the actor, but who says, e.g., hate crimes vs. crimes)
- **By Result:** cause terror (in the mind of the affected, but what about releasing mice in a crowd?)
- **When is a freedom fighter a terrorist?**

The Ends Justify the Means

- **Rejected in Western Thought**
 - ◆ Actually, reject statement that particular ends justify any and all means
 - ◆ Most agreed that removing WMD from Iraq justified invasion; however, agreement not universal
- **Terrorists either**
 - ◆ Believe their ends justify any means, or
 - ◆ Believe their ends justify means that we don't agree are justified

One might attempt to define terrorism by its effects, by its intent, or by its results. However, each has problems when taken by itself. Killing all bugs might not be terrorism by any cultural definition. However, killing cows in India certainly might be terrorism; whereas, killing cows in the US would not be automatically assumed to be terrorism. Defining the intent of a perpetrator is difficult. Even statements by the perpetrator may be insufficient as they may be deliberately misleading or may not reflect the underlying root causes. Even though terror may be the result of an act, not all terror is caused by terrorism.

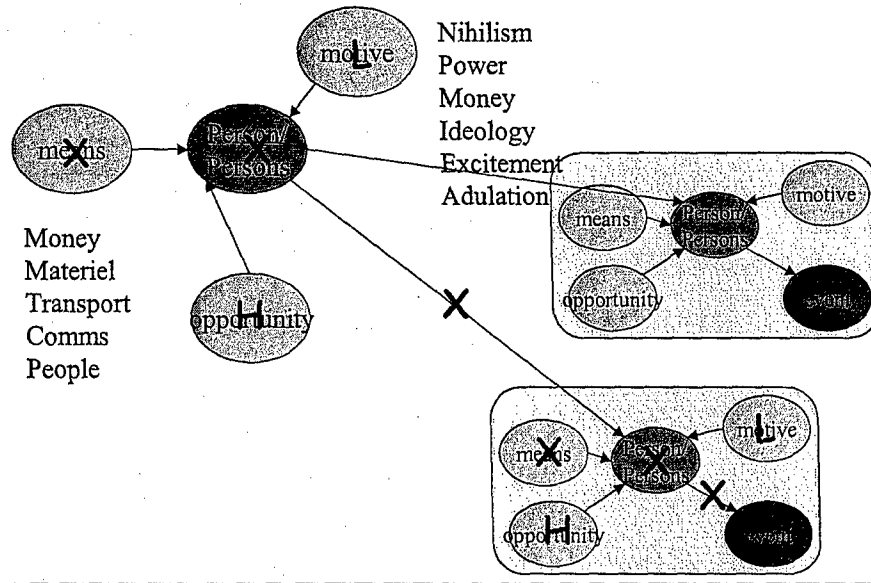
The fact that some identify individuals as freedom fighters and some others identify the same individuals as terrorists illustrates that the definition is not straightforward.

Perhaps terrorism has a philosophic identity. Most of the Western world rejects the philosophy that the ends justify the means, or rather that a particular goal can justify any and all means for its achievement. Western philosophy contends that the means for achieving a particular goal, such as ensuring that Iraq had no weapons of mass destruction (WMD), requires debate for justification.

Perhaps it is a fact that terrorists either believe that their ends justify any means or that their ends justify means that the rest of us don't believe are justified by those ends.

If this is the case, then naming the conflict a War on "Terrorism" is appropriate, because we are objecting to the tactics (means) being used, not their right to desire their ends.

Anatomy of Terrorism



It was observed that terrorism often presents itself in a backward sequence.

First, an event is observed.

Only after that are perpetrators discovered, said perpetrators having motives, means and opportunity.

After that, it may be discovered that there is an organization behind the perpetrators. The organization having its own, perhaps different, motives, means and opportunities.

This organization may instigate additional events through other perpetrators.

At the event level, the "X" marks indicate avenues for stopping terrorism, through preventing a particular event, capturing or killing the potential perpetrators, or removing their access to the means of creating the event. Removing all the opportunities, "defending against attacks," is "H" or hard. Removing the motive sets for potential perpetrators is a long-term effort, "L".

At the organizational level, the "X," "H," and "L" marks have the same meanings.

Anatomy of Terrorism



Sample Characteristics

- Threat or use of violence over large scales
 - Political goals
 - Ideological goals
 - Unlawful tactics
 - May have legal front
 - Target civilians deliberately
 - Non-state organization
 - State terrorism
-

Several characteristics were proposed as potential determinants for the existence of terrorism.

The threat or use of violence over large scales is meant to exclude local terrorism (e.g., the Washington snipers) from the purview of the Global War on Terrorism.

It was posited that from an organizational perspective political and/or ideological goals should be present. This doesn't exclude money, excitement or adulation as goals of some of the individuals involved.

The group was convinced that the deliberate and consistent use of unlawful tactics must be involved.

The existence of legal front organizations, political or charitable, should not exclude organizations as terrorists. Some organizations may also use legitimate channels in such a fashion as to bring into question that legitimacy, e.g., the Hawala money transfer/banking network, or national policies of non-disclosure of banking information

Conscious, non-state organizations that conduct operations are candidates. This does not exclude collections of organizations or organizations with loosely connected additional individuals.

State supported or sponsored organizations are possible candidates; however, there was disagreement as to whether organizations that act solely within the sponsoring state could be labeled as terrorist.

Potential Characteristics vs Iconic Groups



Characteristic	Al Qaeda	Taliban	Jamaah Islamiyah	Hamas	IRA	US Army
Threat or use of violence over large scales	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Political goals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ideological goals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Unlawful tactics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
May have legal front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Target civilians deliberately	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Non-state organization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
State terrorism	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The chart above shows that no single characteristic is sufficient to define an organization as a valid target for the Global War on Terrorism. However, taken as a whole, organizations with a preponderance of check marks, especially ones using unlawful tactics and targeting civilians deliberately, are targets.

15 Minute Presentations to WG 3

- ***Agent Based Modeling for Stability and Support Operations Analysis*** Philip Barry, Matthew Koehler, Brian Widdowson
 - ***Threat Anticipation Program Agent-Based Simulation of Terrorist Motivations, Objectives and Strategies (TAPAS)*** Edward MacKerrow
 - ***Global Terrorism: Support Tools for Prediction and Planning*** Jim Vaccaro
 - ***Dynamic Network Analysis for Counter Terrorism*** Kathleen M. Carley
 - ***Air Operations Center (AOC) Tools to support GWOT Strategy*** Lawrence Spinetta
 - ***Counter-Terrorism Analysis Capability (CTAC) Concept*** Mike McCurdy
 - ***COAST, etc.*** Patrick Allen
 - ***FAST Toolbox for OOTW*** John Cipparone
-

MetaData on Tools



Type Application	Technique	Direct User
Simulation, Database, Spreadsheet, Custom Program, Checklist	Automated Cluster Analysis, Visual GIS, Statistical Analysis, Network Analysis, Forecasting, Prediction, Situation Awareness, Fault Tree, Decision Tree, Process Control	OR Analyst, Intel Analyst, Detective, G3, G5, Trainer, Troop, Commander
web site, spreadsheet	model, methodology, forecasting (~ 1 month forecast)	OR Analyst, Intel analyst,

Name	Category	Focus Area	Description: Use Case	Application Area	Time Frame	Military Use
Examples	Tool, Method, Data, or Person			Terrorists, Events, Instability, Materials, Funding, Support, Plans, Operations	Results are applicable Now, Real Soon, Later	Operations, Crisis Planning, Training, Deliberate Planning, Analysis
Near-term Forecasts of Crisis and Instability using Text-Based Events (NEAR-TERM FORECITE)	Tool		online, closed access, open source web site that houses data/analysis to monitor and forecast indicators associated with instability in near-real time	instability	now	crisis planning, EBO (strategic level), training, analysis

For whom?	Status	Cost	Source	POC	accredited for which networks?	Relevance (1-5)	(1-Utility/Simplicity (1-5)	Validity (1-5)	Comment
G3, G5, G5, G7, Commander, Ambassador, FBI, CIA	Available, Prototype - Active, Prototype - Inactive, Concept	(unit cost, program cost)	(company, agency, etc.)						
J2/J5, COCOM, State Dept/ Ambassador, FBI, CIA	available now	nothing; funding requested for future enhancement/functionality	Center for Army Analysis (CAA)	Dr. Sean O'Brien		4	5	5 (validated against historical data)	

A sample of metadata entry.

MetaData on Tools



MetaData Item	Examples		
<ul style="list-style-type: none"> Name POC Relevance Source Status Technique Time Frame Training Time Type Application Use Issues Utility/Simplicity Validity WG 3 Assessment When was it built Which questions does it answer? (focus area(s)) 	<p>(of tool)</p> <p>(1-5)</p> <p>(company, agency, etc.)</p> <p>Available, Prototype - Active, Prototype - Inactive, Concept</p> <p>Automated Cluster Analysis, Visual GIS, Statistical Analysis, Network Analysis, Forecasting, Prediction, Situation Awareness, Fault Tree, Decision Tree, Process Control</p> <p>Results are applicable Now, Real</p> <p>Simulation, Database, Spreadsheet, Custom Program, Checklist</p> <p>(1-5)</p> <p>(1-5)</p>	<ul style="list-style-type: none"> "For whom" Accreditation Application Area Category Comment Cost Customization Time Description: Use Case Direct User Does it handle open source? HW/SW Requirements I/O Format (e.g., XML) Military Use 	<p>G2, G3, G5, G7, Commander, Ambassador, FBI, CIA</p> <p>What type of network can this tool be displayed on: classified or unclassified</p> <p>Terrorists, Events, Instability, Materials, Funding, Support, Plans, Operations</p> <p>Tool, Method, Data, or Person</p> <p>(unit cost, program cost)</p> <p>OR Analyst, Intel Analyst, Detective, G3, G5, Trainer, Troop, Commander</p> <p>Operations, Crisis Planning, Training, Deliberate Planning, Analysis</p>

A listing of metadata categories and examples of entry types

Statistics on Tools

- 7 data sources
 - 14 methods
 - 7 persons
 - 73 tools
-

Initial statistics on the numbers of each category of resources in the spreadsheet.
The numbers will be larger in the final spreadsheet.

Technologist Subgroup: 14 Focus Areas



ID #	Questions
-------------	------------------

- | | |
|------|----------------------------------------------------------------------|
| • 1 | How can we predict where and when terrorists will attack? |
| • 2 | How can we identify terrorists? |
| • 3 | How do we locate and model terrorist funds and funding streams? |
| • 4 | How do we locate and model terrorist resources and resource streams? |
| • 5 | How do we predict the effects of actions taken against terrorists? |
| • 6 | How do we engage in a war of ideas at home and abroad? |
| • 7 | How do we detect and counter deception? |
| • 8 | How do we support planning, execution monitoring and assessment? |
| • 9 | How do we support creating strategy and objectives? |
| • 10 | How do we do adversary modeling? |
| • 11 | How do we construct a social network of parent organizations? |
| • 12 | How do we identify individual terrorists to kill? |
| • 13 | What is the nature of GWOT? |
| • 14 | What metrics do we need to develop? |
-

The fourteen focus areas identified by the Technologist Subgroup.

Technologist Subgroup: Process



- **Mapped OR techniques to focus areas**
 - ◆ Identified desired capabilities to include gaps
 - ◆ Did not explore capabilities not used
 - ◆ Did not explore how terrorists might circumvent our approaches
- **Refined draft GWOT tool, data, and decision support worksheet**
- **Future Challenges and Observations**
 - ◆ Need Organization to coordinate inter-agency and coalition capabilities (e.g., NSC for US)
 - Lack of coordination hurts DoD effectiveness
 - Lack of coordination hurts formulation of cohesive National/Coalition Strategy
 - Lack of coordination enables terrorists to circumvent individual agency efforts
 - ◆ Need to transition universities' S&T initiatives directly to DoD and Intelligence Agencies
 - ◆ Characteristics of classified database formats and data limit ability to develop directly applicable and robust tools
- **Extent of Collaboration**
 - ◆ DoD facilitates coordination of US Services and Coalition Forces
 - Potential for facilitating USG Interagency coordination?

The technologist subgroup began by defining the 14 questions of the previous slide. They then mapped techniques, methodologies, and data requirements that were appropriate for answering each question (shown on the next set of slides).

Using this mapping, the subgroup entered information into the spreadsheet showing which focus areas (questions) each tool might address.

Finally, the subgroup listed challenges and observations. The more general comments have been combined in the final recommendations. The ones listed here are more pertinent to tool creation and use. Coordination and collaboration are prominent needs.

1. How Can We Predict Where and When Terrorists Will Attack?



List of Techniques

- Intelligence Community tools
- Terrorists Futures Market
- Data Mining coupled with Markov Models for prediction
- Multiagent systems for general predictions
- Visualization with human reasoning to predict patterns
- Simple regression analysis on existing data
- Models of Red, like systems dynamics models
- Massive player online games (Everquest)
- Wargaming

Needs and Data Sources

- Intelligence Community databases

Techniques and needs or data sources applicable for this focus area.

2. How Can We Identify Terrorists?



List of Techniques

- **Strategic**
 - ◆ Data mining of raw text to identify new organizations or size of organizations
 - ◆ Network Estimation
 - ◆ Link analysis and social network analysis
 - ◆ Discriminant analysis
- **Operational**
 - ◆ Inferring Resource flows
 - ◆ Data analysis, link analysis, dynamic network analysis
 - ◆ Simulation of network perturbations
 - ◆ Wargaming
- **Tactical**
 - ◆ Profiling of terrorists
 - ◆ Target Analysis
 - ◆ Friendly OPSEC
 - ◆ Vulnerability/criticality analysis
 - ◆ Forensic Analysis
 - ◆ Terrorist Flow and process models
 - ◆ System dynamics, colored Petri nets, multiagent systems
 - ◆ Influence networks, simulation

Needs and Data Sources

- **Strategic**
 - ◆ Identify Region of Interest
 - ◆ Identify the Terrorist Groups in Region of Interest
 - ◆ Databases of existing terrorist groups
 - ◆ HUMINT/SIGINT
- **Operational**
 - ◆ Command Structure and key actors
 - ◆ Modus operandi
 - ◆ Level of effort or sophistication
 - ◆ Known resource flows
- **Tactical**
 - ◆ Terrorist OPSEC Tactics
 - ◆ Interagency Terrorist Lists
 - ◆ Access to real-time raw field data

Techniques and needs or data sources applicable for this focus area.

3. *How Do We Locate and Model Terrorist Funds and Funding Streams?*



List of Techniques

- **Strategic**
 - ◆ Mayaviz--virtual simulated city
 - ◆ Dynamic network and network flow models
 - ◆ Link analysis tools
 - ◆ Multi-agent modelling
 - ◆ Auditing tools
 - ◆ Data mining tools
 - ◆ Explore Dept of Treasury / ABA techniques
- **Tactical**
 - ◆ Profiling
 - ◆ Link Analysis

Needs and Data Sources

- **Strategic**
 - ◆ Data sources (Hawala, charity flows, bank transactions)
 - ◆ Security Exchange data
 - ◆ Criminal activity to support terrorism (smuggling, robbery, narcotics)
- **Tactical**
 - ◆ Where did the individual get funds?
 - ◆ How much money is the individual carrying?
 - ◆ Data commonality issues

Techniques and needs or data sources applicable for this focus area.

4. *How Do We Locate and Model Terrorist Resources and Resource Streams?*



List of Techniques

- **Strategic**
 - ◆ Mayaviz--virtual simulated city
 - ◆ Dynamic network and network flow models
 - ◆ Multi-agent modeling
 - ◆ Link analysis tools
 - ◆ Data mining tools
 - ◆ Explore Customs tools
- **Tactical**
 - ◆ Profiling
 - ◆ Link Analysis
 - ◆ Dynamic Network Analysis

Needs and Data Sources

- **Strategic**
 - ◆ Data sources (manpower, weapons, ideology)
 - ◆ Criminal activity to support terrorism (smuggling, robbery, narcotics)
 - ◆ Explore Customs data sources
- **Tactical**
 - ◆ Where did individual get resources?
 - ◆ Data commonality issues

Techniques and needs or data sources applicable for this focus area.

5. How Do We Predict the Effects of Actions Taken Against Terrorists



List of Techniques

Needs and Data Sources

- **Long term Effects (5+ years)**
 - ◆ COA Analysis
 - ◆ Wargaming (Seminar, structured)
 - ◆ Simulations (multiagent, other)
 - ◆ Planning tools
 - ◆ Bayesian Influence Analysis
 - ◆ System Dynamic Models
 - ◆ Dynamic Network Analysis Tools
 - ◆ ACTOR-like models
 - ◆ Enterprise Models (Multi-regression models)
 - ◆ Cultural modeling
 - **Mid Term (1-5 years)**
 - ◆ Real gap in applying techniques
 - **Near Term (≤ 1 year)**
 - ◆ COA Analysis
 - ◆ Wargaming (Seminar, structured)
 - ◆ Simulations (multiagent, other)
 - ◆ Planning tools
 - ◆ Bayesian Influence Analysis
 - ◆ System Dynamic Models
 - ◆ Dynamic Network Analysis Tools
-

Techniques and needs or data sources applicable for this focus area.

6. How Do We Engage in a War of Ideas at Home and Abroad



List of Techniques

- Planning Tools
- Assessment Tools
- Focus Groups
- Cultural Training Tools
- Polling and market research, surveys, diffusion models
- Social Network Analysis (Identify opinion leaders)
- Meme (e.g., Idea battlespace/arena)
- Mental Model (what they say, semantic comparison, ontology)
- High level simulations
- Dynamic Network Analysis
- Support to PSYOP (e.g., CNA)
- Techniques to encourage popular support against terrorists
- Bayesian Influence techniques
- Webscraping techniques
- Automated and semi-automated text analysis techniques
- Media Analysis
- Language translators

Needs and Data Sources

- Are we engaged at the national/global level?
- Strategic PSYOP (Gap)
- Measuring effect of PSYOP
- Massive Data storage capabilities required

Techniques and needs or data sources applicable for this focus area.

7. How Do We Detect and Counter Deception?



List of Techniques

- Data Mining Tools, perturbation analysis
- Linguistic techniques to identify excess pauses
- Polyscans, brain scans
- Wargaming, brainstorming
- Structure organization to avoid miscommunication and detect deception
- Analyst cueing tool (identify non-redundant or discrepant information)

Needs and Data Sources

- How do we identify something different from the norm

Techniques and needs or data sources applicable for this focus area.

8. *How Do We Support Planning, Execution Monitoring and Assessment?*



List of Techniques

Needs and Data Sources

- Classic OR Techniques
- Planning tools
- Colored Petri Nets
- And everything above and below as reachback support

Techniques and needs or data sources applicable for this focus area.

9. How Do We Support Creating Strategy and Objectives?



List of Techniques

- Wargaming
- Brainstorming
- SWOT analysis (strengths, weaknesses, opportunities and threats)
- Influence models
- Multiagent modeling (e.g., evolutionary models)
- Deliberate analysis

Needs and Data Sources

Techniques and needs or data sources applicable for this focus area.

10. How Do We Do Adversary Modeling?



List of Techniques

- Wargaming
- Brainstorming
- SWOT analysis (strengths, weaknesses, opportunities and threats)
- Influence models
- Multiagent modeling (e.g., social network and cultural models)
- Bayesian Net Models
- Deliberate analysis
- Rule based Red reaction models
- Red Teaming
- Reinforcement neural net
- Colored Petri Nets

Needs and Data Sources

Techniques and needs or data sources applicable for this focus area.

11. How Do We Construct a Social Network of Parent Organizations?



List of Techniques

- **Strategic**
 - ◆ Data mining of raw text to identify new organizations or size of organizations
 - ◆ Network Estimation
 - ◆ Link analysis and social network analysis
 - ◆ Discriminant analysis
- **Operational**
 - ◆ Inferring Resource flows
 - ◆ Data analysis, link analysis, dynamic network analysis
 - ◆ Simulation of network perturbations
 - ◆ Wargaming
- **Tactical**
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 - ◆ Target Analysis
 - ◆ Friendly OPSEC
 - ◆ Vulnerability/criticality analysis
 - ◆ Forensic Analysis
 - ◆ Terrorist Flow and process models
 - ◆ System dynamics, colored Petri nets, multiagent systems,
 - ◆ Influence networks, simulation

Needs and Data Sources

- **Strategic**
 - ◆ Identify Region of Interest
 - ◆ Identify the Terrorist Groups in Region of Interest
 - ◆ Databases of existing terrorist groups
 - ◆ HUMINT/SIGINT
- **Operational**
 - ◆ Command Structure and key actors
 - ◆ Modus operandi
 - ◆ Level of effort or sophistication
 - ◆ Known resource Flows
- **Tactical**
 - ◆ Terrorist OPSEC Tactics
 - ◆ Interagency Terrorist Lists
 - ◆ Access to real-time raw field data

Techniques and needs or data sources applicable for this focus area.

12. How Do We Identify Individual Terrorists to Kill? (1)



List of Techniques

- **Strategic**
 - ◆ Data mining of raw text to identify new organizations or size of organizations
 - ◆ Network Estimation
 - ◆ Link analysis and social network analysis
 - ◆ Discriminant analysis
- **Operational**
 - ◆ Inferring Resource flows
 - ◆ Data analysis, link analysis, dynamic network analysis
 - ◆ Simulation of network perturbations
 - ◆ Wargaming
- **Tactical**
 - ◆ Profiling of terrorists
 - ◆ Target Analysis
 - ◆ Friendly OPSEC
 - ◆ Vulnerability / criticality analysis
 - ◆ Forensic Analysis
 - ◆ Terrorist flow and process models
 - ◆ System dynamics, colored Petri nets, multiagent systems,
 - ◆ Influence networks, simulation

Needs and Data Sources

- **Strategic**
 - ◆ Identify Region of Interest
 - ◆ Identify the Terrorist Groups in Region of Interest
 - ◆ Databases of existing terrorist groups
 - ◆ HUMINT/SIGINT
- **Operational**
 - ◆ Command structure and key actors
 - ◆ Modus operandi
 - ◆ Level of effort or sophistication
 - ◆ Known resource flows
- **Tactical**
 - ◆ Terrorist OPSEC Tactics
 - ◆ Interagency Terrorist Lists
 - ◆ Access to real-time raw field data

Techniques and needs or data sources applicable for this focus area.

12. How Do We Identify Individual Terrorists to Kill? (2)



List of Techniques

Needs and Data Sources

- **Long term Effects (5+ years)**
 - ◆ COA Analysis
 - ◆ Wargaming (Seminar, structured)
 - ◆ Simulations (multiagent, other)
 - ◆ Planning tools
 - ◆ Bayesian Influence Analysis
 - ◆ System Dynamic Models
 - ◆ Dynamic Network Analysis Tools
 - ◆ ACTOR-like models
 - ◆ Enterprise Models (Multi-regression models)
 - ◆ Cultural modeling
 - **Mid Term (1-5 years)**
 - ◆ Real Gap in applying techniques
 - **Near Term (≤ 1 year)**
 - ◆ COA Analysis
 - ◆ Wargaming (Seminar, structured)
 - ◆ Simulations (multiagent, other)
 - ◆ Planning tools
 - ◆ Bayesian Influence Analysis
 - ◆ System Dynamic Models
 - ◆ Dynamic Network Analysis Tools
-

Techniques and needs or data sources applicable for this focus area.

13. What is the Nature of GWOT?



List of Techniques

- See Working Group 6 results and introductory notes on terrorism and Insurgencies

Needs and Data Sources

Techniques and needs or data sources applicable for this focus area.

14. What Metrics Do We Need to Develop?



List of Techniques

Needs and Data Sources

- See Working Group 4 results
-

Techniques and needs or data sources applicable for this focus area.

End User Subgroup: Process

- **Purpose: Evaluate “tools and their products” for “end use and implementation”**
 - **Define “users”**
 - **Identify “for whom”**
 - **Define criteria for use (Scale 1-5)**
 - ◆ Relevance (applicability to the decision or question)
 - ◆ Utility/Simplicity (ease of use of output)
 - ◆ Validity (accuracy for intended purpose)
-

The end user subgroup had the problem of defining who the end users might be and how to evaluate tools for use.

The criteria they decided upon were relevance to the GWOT problem appropriate to a given end user, the utility and simplicity for the end user of the tool's output (including the possibility of extensive analyst interface between the actual tool output and the output presented to the end user), and the validity of the results for the end user's purposes.

End User Subgroup: Communicating About Tools



Model	Where/When Terrorism										Who are/will be the Terrorists	What Type of Terrorism	What Scale of Terrorism	Impact of Blue Actions	Candidate Blue Actions	
	Size	Future Timeframe														
		H	D	W	M	Y1	Y5	Y10	Y25							
NEAR TERM FORCITE	Room															
	House															
	Block															
	Town n/Suburb															
	City/County															
	State															
	Country					X	X									

End-User	Where/When Terrorism										Who are/will be the Terrorists	What Type of Terrorism	What Scale of Terrorism	Impact of Blue Actions	Candidate Blue Actions	
	Size	Future Timeframe														
		H	D	W	M	Y1	Y5	Y10	Y25							
Strategic Decision Maker	Room															
	House															
	Block															
	Town n/Suburb															
	City/County															
	State															
	Country															
USER REQUIREMENTS																

The end user subgroup spent a considerable amount of time trying to fit the GWOT problem into the traditional Strategic/Operational/Tactical framework and determined that this framework was inappropriate. They determined that a multi-dimensional framework was more appropriate. One dimension is the functional role of the end user. A second dimension is the physical scale of interest. A third dimension is the time scale of interest. Each end user will be concerned with a specific region of the two scales, as shown by the colored/lined area in the bottom left area of the slide. Each tool will address its own region, as shown in the upper area, marked by the "x"s.

Additionally, each user will be interested in one or more of the questions, shown as user requirements in the lower right of the slide. In this example, all areas are of interest. Each tool will address the questions with different levels of competence. In this example, the two left questions are shown at a yellow/vertical lines (moderate) level; the middle question is shown at the green/solid (good) level; and the right two questions are shown at the red/horizontal line (poor) level.

Recommendations, etc.



- **Data**
 - ◆ Supremely important to analysts: Inputs to analysis
 - ◆ To End Users, data means the output of analysis
 - **Quality of Analyst**
 - ◆ More important than "tools"
 - ◆ Qualities of tools is an easier topic to discuss
 - **Infrastructure easy to overlook**
 - ◆ GIS, general visualization tools, collaborative environment, etc.
 - ◆ There is a Terrorist Watchlist Group that has proposed standards for icons, which may be useful in presenting information
 - ◆ Things that reduce data management time: into and between tools
-

Data showed an interesting dichotomy. For analysts, data is supremely important and means the inputs to the tools. For end users, the analysts' data is unimportant; however, the outputs of the analysis are often referred to as data and are naturally important.

The group agreed that the quality of the analyst is more important than the quality of the tools. A good analyst can produce good results from poor tools; but a poor analyst is unlikely to produce good results even with good tools. However, the quality of tools is easier to discuss.

Infrastructure tools are the ones that support the process of analysis. Tools such as geographical information systems (GIS), visualization tools, and collaborative environments can be invaluable in the correct settings even though they are not GWOT tools, per se. Similarly, tools that reduce data management time serve to improve the analysis.

Recommendations, etc.



- **Tool qualities vary**

- ◆ Time to use, learn, brief results
- ◆ Readiness for use, manpower to operate
- ◆ Robustness in face of limited or poor data
- ◆ Fractional applicability to GWOT (low fraction may be useful when there is nothing else)
- ◆ "Force" of results: hint, suggestion, "likely," "probable," firm, "The Answer"

- **Static vs Dynamic**

- ◆ Metrics
 - ◆ Tools
 - ◆ Rule sets
 - ◆ ...
-

The qualities of the tools are varied. Each has its own time to use, learn, brief results, etc. The readiness for use and the amount of manpower required to operate the tools varies. Some are more robust in the face of limited or poor data and others require complete and exact data to produce any results at all.

Two other qualities are important to understand. Naturally, tools that are totally committed to GWOT are more efficient in the sense that effort is not expended to generate only small amounts of applicable output; however, a tool with only fractional applicability can be useful when nothing else is available. In addition, tools vary in the "force" of their results. A tool that delivered "The Answer" would be wonderful, although very unlikely. However, **knowing** that a tool only hints at a result can be very useful if there is no other input to the decision.

Static tools, metrics, rule sets, etc., can be useful; however, in the face of likely continual change in the GWOT environment, dynamic tools, metrics, rule sets, etc., may be more useful.

Recommendations, etc.

- **No tool satisfies all needs across:**
 - ◆ Levels of command
 - ◆ Segments of problem domain, e.g., finding terrorists, reducing spread of terrorism, preventing resurgence
 - ◆ Reach-back and/or collaboration may be frequently needed
 - **Tool Content**
 - ◆ We can use traditional OR techniques (simulation, regression, etc.), but we need some new specialized ones
 - ◆ Major gaps in current tools are at the application level rather than at the general technique level
 - ◆ Tools should be assessed and continually reassessed against reality
 - **Broader Viewpoint**
 - ◆ We need extensive interagency and coalition data on terrorism/terrorists
 - ◆ We need to look outside the military at other communities, such as banking, marketing and media, for ways to handle human factors
 - ◆ New applications should be developed by multidisciplinary teams
-

No tool was discovered that satisfies all needs in any dimension. Combinations of tools and collaboration/reachback will be needed.

Traditional OR tools will be useful for GWOT; however, we need some new ones, also. The major gaps appear to be at the application level, rather than at the methodology level.

We need to take a broader viewpoint in GWOT than in combat. Other communities are involved and other communities can help with analysis resources.

Recommendations, etc.

- Applicability of the strategic-operational-tactical framework to GWOT is in question
-

Finally, the applicability of the strategic-operational-tactical framework in examining the needs for tools was not helpful. This might have implications for the value of this framework in the broader prosecution of the GWOT.

**The Global War on Terrorism: Analytical
Support, Tools, and Metrics of
Assessment**

Working Group 4: GWOT Metrics

*30 November - 2 December 2004
US Naval War College
Newport, Rhode Island*

Working Group 4 Chairs were Dr. John Borsi and Lt Col Bob Rosedale.

Introduction



- **Key Focus Area**

- ◆ JCS J-5 GWOT Strategic Framework Metrics
 - Existing process to assess progress toward SECDEF GWOT objectives

- **State of the Art**

- ◆ J-5 community identified issues but had no objective metrics
- ◆ Six J-5 defined Military Strategic Objectives
 - Proposed MOE's for each MSO

- **Good Metrics: What are you really trying to capture – Ends, Ways, or Means?**

- ◆ Ends metrics are yardsticks to measure progress toward or away from a stated objective
- ◆ Ways metrics measure level of activity or inputs that you think may influence the objective
- ◆ Means metrics measure resources expended to support the ways
- ◆ All metrics should be
 - S - Specific
 - M - Measurable
 - A - Achievable
 - R - Relevant
 - T - Timely

The focus of the working group changed from the published TOR to supporting J-5s current efforts in developing the National Military Strategic Plan for the War on Terror. The NMSP-WOT contains a hierarchy of leadership objectives and issues on which the SECDEF would like to measure our progress. Prior to this workshop the existing metrics are subjective assessments.

Our challenge was to identify OBJECTIVE measures.

Recognizing that we did not have enough time here to accomplish everything needed to define good metrics we did try to keep some of the basics in mind for the development of good measures.

Military Strategic Objectives (MSO)



- **Establish conditions that counter ideological support for terrorism**
 - **Defeat terrorists and their organizations**
 - **Deny terrorists the resources they need to operate and survive**
 - **Enable partner nations to counter terrorists**
 - **Persuade, coerce, and when necessary, compel states and non-states to cease support for terrorists**
 - **Deny WMD/E proliferation, recover and eliminate uncontrolled materials, and maintain capacity for consequence management**
-

These are the 6 Military Strategic objectives we focused on to develop objective measures.

Example Measures



- **MSO: Deny WMD/E Proliferation, Recover and Eliminate Uncontrolled Materials, and Maintain Capacity for Consequence Management**

- ◆ **Issue: Capacity for consequence management**

- ◆ **Metrics**

- Number of HAZMAT teams
- Timeliness, accuracy, relevancy, and coverage of notification system
 - Number of exercises/events that meet established standards
- Percent of response times that meet or exceed established standards
- Number, frequency, and scope of civil HAZMAT exercises and assessment
- Number of partner nations with some capability
 - Resources
 - Training
 - Combined exercises
- Number of recovery and reconstitution plans for critical infrastructure
 - Sourced?
 - Exercised?
- Readiness ratings for identified first responders

This is an example of some of the objective measures we developed. For this MSO, one of the identified "issues" was maintaining our capacity for consequence management. Looking at this issue we developed a range of proposed metrics to track over time that range from the relatively mundane notion of the number of hazmat teams we have, to the more nebulous issue of timeliness, accuracy, relevancy and coverage of notification.

This last issue highlights a common theme through many of the metrics we developed that we need to have established "standards" which we would measure our performance against.

In addition, measuring capability against "rare events" will probably require a full complement of somewhat realistic exercises to test that capability.

Work to be Done



- **Refine identified measures into useful metrics**
 - **Identify additional metrics required to fully assess MSOs**
 - **Establish OPR/OCRs (interagency and within DoD)**
 - **Identify data sources**
 - **Partner with Civil Affairs and Information Operations to develop approaches to "winning the hearts and minds"**
 - ◆ The working group questioned the accuracy of "opinion polls and surveys" as sufficient for inclusion as metrics
-

Our experience over the last couple of days fully lived up to our expectations that we could not do it all. Here we have listed most of the activities that will need to be done to make our efforts more useful.

Of particular concern is the need to establish offices of primary responsibility and offices of collateral responsibility for much of the information needed for these metrics. The current approach is to farm all of the measures out to the COCOMS. Many of the defined metrics are better suited to agencies outside the DoD or for central collection agency such as DIA or the Terrorist Threat Integration Center.

Unresolved Issues



- **MSOs versus military activities**

- ◆ What does the military report on? How do we report at the strategic level on objectives in which the military is a "supporting" agency?
 - Example: "Persuade, coerce, ..., states . . . to cease support for terrorists"
- ◆ WG Recommendation:
 - 1. Assign Global metrics to central agencies and collect non-DoD metrics from responsible agencies
 - 2. Task COCOMs with measures of military activities and local/immediate impacts
 - 3. Correlate military activities to direct MSO metrics

- **Available resources to collect, process, and score metrics**

- **Linkage to SECDEF overarching objectives**

The single largest point of contention within our group centered on whether we should be reporting on the level and effectiveness of military activities or whether our focus should be on metrics that are often outside the control of the DoD. Recognizing that this discussion was not unique to this workgroup, we developed a compromise position that we recommend on this slide — centered on correlating levels of military activity to the objective measures of progress for that objective.

Additionally, we need to note that we are talking about a significant level of effort required to go from "subjective" assessments to "quantitative" assessments. Realistically, resources will need to be allocated toward this effort if the DoD decides to implement even a small part of this "quantification effort."

Finally, we did not fully do what we set out to do — we still need to link these metrics to SECDEF defined overarching objectives.

**The Global War on Terrorism: Analytical
Support, Tools, and Metrics of
Assessment**

**Working Group 5: Decision Support to
HLS/HLD**

*30 November - 2 December 2004
US Naval War College
Newport, Rhode Island*

The Working Group Chair was Tom Denesia from NORAD-NORTHCOM Analysis Directorate. The Co-Chairs were Glen Roussos and Rich Woodford both from NORAD-NORTHCOM Analysis Directorate.

Background



Working Group 5 was formed to discuss pertinent HLS/HLD issues and focus areas for a potential workshop in the November 2005 timeframe.

Problem Statement



Perceived low level of cooperation among HLS/HLD analytic communities contributes to homeland vulnerability.

Even though some interaction takes place between the HLS and HLD communities, it appears that more could be done to promote coordination between these communities. From an operations research perspective, an interchange between the communities regarding the key issues and resulting decision support tools seems to be needed. For example, within the working group, there was no knowledge of any DoD analysts working with DHS analysts. There seems to be a real need to enhance the cooperation and there appears to be no forum to bring analysts together to bridge analytic issues and analysts which support HLS and HLD.

Mission



- **Establish a cooperative analytic framework**
- **Foster analytic cooperation by**
 - ◆ Providing structure for a recurring forum
 - ◆ Developing strategies to increase cooperation
 - ◆ Addressing analytic disconnects and limitations
 - Between HLS and HLD missions
 - DoD and non-DoD agencies

The analytic community needs to establish a structure or periodic forum where HLS and HLD analysts can interact and exchange information. As relationships are established between the analytic communities, information can be exchanged more freely – fostering improved cooperation.

This forum could identify areas where analytic efforts overlap, where decision support tools exist in one community and not the other, and where there is a lack of decision tools in either community for key issues and questions. It could also identify areas where the unique issues of HLS and HLD have no overlap. The result would be a synergistic effort where overlapping efforts could be minimized and existing tools developed in one community could be shared with the other.

The cooperative forum would primarily focus on the mission aspect of each organization, but could also identify the agency issues associated with HLS and HLD analytic cooperation.

Proposed Workshop Purpose



- **Develop common HLS/HLD analytical support for the protection of the US through the identification of**

- ◆ Critical analytic issues
 - ◆ Analytic capabilities
 - ◆ Opportunities for cooperative analysis
 - ◆ Assessment techniques
 - ◆ Toolsets and models
 - ◆ Data repositories and sources
 - ◆ Gaps and shortfalls
-

The workshop purpose is to identify and understand common areas for analytic support to decision makers in both the HLS and HLD analytic communities.

GWOT Working Group 5 identified a list of areas that each proposed working group for the HLS-HLD Workshop should address and provide as an output from the workshop. These areas include: (1) Critical analytic issues; (2) Analytic capabilities; (3) Opportunities for cooperative analysis; (4) Assessment techniques; (5) Tool sets and models; (6) Data repositories and sources; and, (7) Gaps and shortfalls.

Proposed Focus Areas/Work Groups



- **Maritime Security**
 - **Transportation**
 - **Air and Missile Defense**
 - **Border Security**
 - **National Infrastructure**
 - **Consequence Management**
 - **Vulnerability Assessment – Red Team**
 - **Scenario Drivers**
-

The working group discussed potential focus areas/work groups and which organizations should participate. The specific focus of the working group will be a function of the specific issues and who will end up chairing the group. As a result, our working group discussed and identified potential focus areas, potential membership, and, in some cases, who might potentially lead the working groups. These focus areas include:

Maritime Security should incorporate both maritime defense and maritime domain awareness. This work group should include USCG, DHS, Navy, BICE, and TSA.

Transportation should include maritime, land and air. This WG should include DOT, FAA, USCG, TSA, rail organization, trucking, and Corp of Engineers.

Air and Missile Defense should focus on the connections that are, should & could be made with DHS. This WG should include DHS, FAA, FEMA, JTAMDO, MDA, and SMDC.

Border security should be focused on the land borders with Canada and Mexico. This WG should include Canadians, DHS/BICE, border patrol, N-NC BPG.

National Infrastructure should include: DHS and the National Infrastructure Protection Center (or whatever it is called now under DHS), DTRA, ..)

Consequence Management will look at assets and/or resources required for various events/issues. This WG should include: DHS, FEMA, HHS, CDC, NGB, USCG, ...)

Vulnerability Assessments (via Red Teaming) and associated scenarios (Scenario Drivers) should be addressed prior to the workshop or at least should be an ongoing activity to periodically review and re-assess potential vulnerabilities and the resulting changes in scenarios as they adapt to the threat.

**The Global War on Terrorism: Analytical
Support, Tools, and Metrics of
Assessment**

Working Group 6: Problem Definition

*30 November - 2 December 2004
US Naval War College
Newport, Rhode Island*

Outline

- **Background**
 - **Current GWOT Guidance**
 - **WG 6 GWOT Definition**
 - **Historical Comparison**
 - **WG 6 Definition Comments**
 - **End-state**
 - **Next Steps – How to use the Definition**
 - **Preliminary Recommendations**
-

Background



- **WG 6 Composition**

- ◆ Only one intelligence analyst/Islamic specialist on the first day
- ◆ Group consisted of analysts and operators, users of policy guidance

- **...Beware of conclusions...**

WG 6 focused on the GWOT problem definition. Ideally, this group should have been composed of Department of State representatives, Policy staff, counter-terrorism intelligence experts, operators/COCOM staff, and ORSA analysts.

The group had limited regional experience. Only one member (Mr. Garry Greco) had served on the Joint Intelligence Task Force for Counter Terrorism. Although Gary heavily participated during the formative first day of the working group, he was not available for the remainder of the conference. He greatly contributed to the groups understanding of terrorists associated with the Al Qaeda movement and broader groups in North Africa, the Middle East, Central Asia, and South East Asia.

The group was heavily weighted toward operators/COCOM staff (SOCOM, EUCOM, PACOM, Joint Staff) and ORSA analysts from throughout the Department.

Thus, the perspective of this brief is one of users of policy guidance. We have attempted to frame and comment upon existing guidance and open literature on GWOT from an 'analytic bent' that we hope will be of assistance to our leadership and for future analytic efforts.

WG 6 Participants



• Mr. Andrew Coe	IDA
• Mr. Michael DeBarto	SAIC
• LTC David Doane	HQDA
• Mr. Curt Doescher	Allion
• Dr. Stephen Downes-Martin	NWC
• Mr. Preston Dunlap	OSD PA&E
• Mr. Robert Eberth	Sanderling Research Corp
• Mr. Gary Greco	NWC/DIA JITF(CT)
• MAJ Jonathan Hamill	USAF
• Capt Cheryl Hetherington	USAF
• MAJ Dan Leventry	EUCOM
• Lt Col Peter Livingston	USAF
• Dr. David Markowitz	OSD PA&E (Chair)
• Mr. Scott Mingledorff	NGIC
• Mr. Michael Ottenberg	AT&T
• LTC Burdett Thompson	Joint Staff J-5
• COL Glenn Vavra	SOCOM
• Dr. Robert Westerman	PACOM
• Mr. James Bexfield, FS	OSD PA&E (Synthesis Group)
• Dr. Gregory Parnell, FS	USMA (Synthesis Group)

Webster's Definition



- Define: 'to explain the nature or essential qualities of'

Although the definition of definition is elementary, a descriptor of the nature of the GWOT conflict is particularly important for analysts without large exposure to high-level policy debate on the GWOT strategy, objectives, and goals. Without it, analysts will wander. As of the time of this MORS Workshop, only a limited number involved with GWOT contingency plan development have been exposed to this information. Unfortunately, this work is still in draft and may not be released to a wider audience.

Current GWOT Guidance

- **Definition from current strategy documents**

- ◆ Three objectives for GWOT
 - Defend the homeland
 - Defeat terrorist networks
 - Win the war of ideas
- ◆ Enemy is a 'network of networks' composed of extremists

- **Problem: current GWOT guidance**

- ◆ Does not describe the nature of the conflict
 - It focuses on the tactic employed (terrorism) which leads to a failure to appreciate the nature of the conflict
 - A "network of network" describes all human activities
 - Is too easily confused with targeting
- ◆ Is too nebulous to operationalize – what is the war of ideas?
- ◆ Does not acknowledge potential long duration of the conflict

There are several published and draft GWOT guidance documents. The important guidance documents include the "National Strategy for Combating Terrorism" developed by the National Security Council, the Department of State Regional Action Plans, and the draft National Military Strategic Plan for the War on Terror. The 9/11 Commission report, although not a policy document, also provides valuable insights on the nature of the conflict.

The existing guidance documents and the 9/11 commission are self-consistent on the overall objectives for the GWOT. These are summarized under the first bullet.

However, the guidance is vague on the nature of the conflict. Chapter 12 of the 9/11 Commission is very direct in its criticism of the policy for its lack of clarity. The title 'Global War on Terror' is not analytically productive in that terrorism is a tactic to achieve an ends. Beyond a criminal organization, it does not describe the threat or source of conflict — a people with a political objective.

Within the Department, the published descriptive terms meant to convey further meaning, such as a 'network of networks', are not particularly useful. A network can describe any sort of human activity. For example, working group 6 is a network. At the next level, this MORS conference is a network of networks. Unfortunately in the Department of Defense, the term 'network' has been utilized in a variety of contexts with connotations potentially inappropriate for GWOT — It describes a communications system, a new form of high-tech, 'transformed' 'net-centered' warfare only available to the US, and a method used for targeting. All but the last are confusing when describing the Al Qaeda movement and the last leads one to focus on killing — not the larger war of ideas.

Additionally, none of the documents specify the tenets for the war of ideas. What are ours and what are theirs? Again, terrorism is a tactic, not a people, movement, or objective.

Lastly, all parties studying GWOT generally agree that the global conflict that resulted in the 9/11 attacks will last for an extended period. Although the term 'Global War on Terror' has strong political motivation, the war of ideas may necessitate preparing the American people for a conflict potentially lasting decades.

WG 6 GWOT Definition

- **Problem statement**

- ◆ The world is confronted with an insurgency within Islam of global scope

- **Challenge**

- ◆ De-legitimize the insurgency
- ◆ Support the Muslim community in developing viable alternatives to the insurgency
- ◆ The US will need a global strategy, yet need to be locally flexible at the operational and tactical levels

- **Complications**

- ◆ The conflict does not appear to have any bounds. If there are any, they will be determined by the Muslim population
- ◆ The insurgency appears to have expansive, nonnegotiable political aims
- ◆ WMD and other technologies have changed the calculus of fringe-element insurgents
- ◆ Insurgent area of operations has expanded to include the United States, Europe, and the rest of the non-Islamic world

- **Center of Gravity**

- ◆ Population (both theirs and ours)

- **Better Means:**

- ◆ Support the locals to win the war for themselves

Definition consistent with:

- Defend the homeland
- Defeat terrorist networks
- Win the war of ideas

Nature and Focus are different

Although controversial and politically sensitive, the term 'insurgency within Islam' is highly descriptive of the nature of the conflict. It provides focus on the threat, their approach, their objectives, and a framework for examining US and community response. Terrorism is a tactic of an insurgent. It is also important to note that this is not a 'war against Islam'. This is a conflict amongst the Muslim community. Al Qaeda is seeking to change the system of governance in the Muslim world. Ultimately, it will be the Muslim community's decision to accept Al Qaeda's vision, continue with their current regimes, or find an alternative.

This working group's adoption of an insurgency framework, however, is not meant to suggest a disregard for the growth of transnational threats or other 'terrorist' organizations. Currently, there is no other global terrorist network beyond Islamic extremists. This is the greatest threat.

Multiple views support an insurgent framework, including the 9/11 Commission and Gen Downing's talk at this MORS workshop. It is interesting to note that Gen Downing participated in the 2002 drafting of the National Strategy for Combating Terrorism and has currently presented an insurgency point of view.

The challenges listed on the slide are natural consequences of an insurgency framework. Core to winning an insurgency is establishing the legitimacy of one's side and de-legitimizing the other. Like all politics, insurgencies are local in nature. Motivation can be global, but they are decided locally.

The complications represent unique features for this insurgency not seen in other historical examples. The combination of the four points creates a direct security concern for the United States and changes US risk calculus for becoming involved with the conflict.

The center of gravity falls naturally from the insurgency framework. It is one of the few common threads among the wide-range of historic insurgencies.

The means for success are only indirectly related to US actions, the best means is for the locals need to win for themselves.

As noted on the bottom right of the slide, the insurgency framework fully supports the three strategy objectives identified on the previous slide. The framework suggests mechanisms to achieve them – mechanisms the ORSA community can assess and improve.

Comparison between Communist Motivated Wars of Liberation and GWOT/Islamic Insurgency

• Similarities

- ◆ Politically motivated and ideologically justified (communism/Islam) – neither are monolithic
- ◆ Myth and glorification of insurgency
- ◆ War by indirect means (proxy)
- ◆ Center of gravity: people
- ◆ Long term war – decades

• Differences

- ◆ Growing nonstate-sponsorship of insurgencies
- ◆ No external/state-imposed limits on actions
- ◆ Global reach/battlefield
- ◆ WMD proliferation to third world insurgents
- ◆ Fragmented and/or incomplete US strategy on
 - Strategic communication
 - Alliance structure
 - US government organization
- ◆ Communism had more clearly defined sponsor – current situation is more like 1880s
- ◆ Religious vs economic motivation

The insurgency framework is further explained by a historical comparison. This slide provides examples of the similarities and differences between the wars of liberation experienced during the early stages of the cold war and today's insurgency within Islam.

Some highlights to note on the slide:

-Similarities, 2nd bullet: The resistance movements of World War II were perceived by the participants as decisive methods for winning the conflict. Both sides propagated myths of their success (French resistance in western Europe, partisan resistance in Eastern Europe, communist resistance in China) and this became the inspiration for many of the wars of liberation started in the late 40s, 50s and early 60s. Noteworthy early successes of these movements furthered the perception. Similarly, the Soviet withdrawal from Afghanistan inspires the Al Qaeda movement. The myths associated with the late 1980s motivate many of their actions with the hope that they may replicate that conflict on a greater scale.

-Differences, first four bullets: One of the primary changes from the cold war era is the growth of non-state sponsored insurgents. Many are empowered by the ease of obtaining disruptive technology. This has several implications. The lack of a state removes traditional interstate escalation control. The ease of movement of non-state actors has expanded the battlefield globally. Unlike the cold war where only the super-powers were able to possess WMD, the spread of technology, in particular bio-technology, is available through small, individually funded organizations.

-Differences, 5th bullet: Another significant change is the underdeveloped USG response to the GWOT. The USG initiated a far sweeping series of alliances, internal reforms, and strategic initiatives to confront Communism and Soviet expansion to include the proxy wars of the era. To date, the US is still formulating its GWOT response. Although the US has created the Department of Homeland Security and produced several national strategy documents, the overall vision of how to wage the war on terror has not been absorbed by a large set of the Department. For example, at this working group only a handful of people understood that the Department of State was the lead organization for the GWOT. This lack of common vision in the staff hinders our ability to wage the strategic communication war, hinders our ability to participate in an alliance structure, or the inter-agency.

WG 6 Definition Comments

• Insurgency framework

- ◆ Significant literature and background on insurgencies
- ◆ Good classification and analytic techniques appear available
- ◆ Tools may not be advanced

• Challenges and gaps

- ◆ How should the USG and international community structure itself to confront the insurgency within Islam?
 - ◆ How do we win the war of ideas?
 - What do Muslims want for a legitimate government?
 - How do we de-legitimize the Islamic extremists?
 - ◆ How does the US influence a society where the US is not wanted?
 - ◆ Can we set boundaries or limits to the violence?
 - ◆ How to set US public expectations for a long, violent war?
-

The last two slides provide a description of the problem. The insurgency framework has several benefits in focusing the analytic community on how to address GWOT issues. These benefits are listed under the first bullet, with a warning that more in-depth tools the ORSA community has relied on in the past may need to be developed for this new conflict.

The second major bullet highlights some major challenges we need to resolve to confront the insurgency within Islam. They are derived from the insurgency framework. These serve as an initial set to motivate the ORSA (and broader) community to develop analytic assessments and methods to support our senior leadership.

End-state

- Muslim population has rejected and acts against any resurgent Islamic insurgency
- Attacks on the United States and its allies have been eliminated or are limited to an acceptable level
- Muslim nations peacefully integrate into the world economy

This slide provides a list of proposed end-state conditions as derived from an insurgency point of view.

The first end-state reinforces the second. The second is not achievable without the first.

The third bullet refers to the overall goal of integrating the Muslim-developed viable 'alternative' within the global economy so that the flow of strategic resources will be maintained.

Next Steps – How to use the Definition

- **Analytic Agenda: Defense Planning Scenario on GWOT**

- ◆ Challenge: inter-relationship between Green (the people) and Red (Islamic insurgents and sympathizers)
- ◆ Uses of the scenario
 - Strategic discussions in QDR
 - Explore re-organization of USG
 - CONOPs testing and development
 - Test and evaluate a 2012 STRATCOM IO portfolio
 - Identify 'TEMPO' of mission-areas for GWOT (how frequently, how long)

- **Initial thoughts on analysis and modeling**

- ◆ Traditional mission models for DoD activities associated with GWOT may be adequate
 - ◆ Insurgency campaign modeling is of concern
-

The working group discussed how the community might use this definition.

The first step was to incorporate our findings into the Analytic Agenda. The Analytic Agenda is a Department-wide initiative to improve the quality, transparency, and speed of analysis to support the Department's decision processes. One of the pillars is the development of a scenario set that will be commonly used by the Components to inform resourcing decisions. The Defense Planning Scenarios (DPS), published by OSD(Policy), are the first step. They provide high level guidance on scenario scope, participants, road to war, Blue and Red CONOPs, and a range of variables the community should explore. Select DPSs are then followed by the development of more in-depth force and CONOPs data sets (Multi-Service Force Deployment data), and 'analytic baselines' - initial analytic assessment with all of the information required to provide that assessment.

Currently, a GWOT scenario is under discussion. If an insurgency framework is used in such a scenario, the DPS will need to expand on the center of gravity: the people. This type of information has not been included in the scenarios to date.

The second sub-bullet lists potential users of the DPS scenario. The working group then discussed methods to assess such a DPS. Overall, the community felt comfortable that mission-level models could be modified or jury-rigged to provide some level of assessment. The greatest challenge would be to link the missions together into an overall campaign plan. Many of the tools, and plain know-how, will need to be developed.

Preliminary Recommendations

- **Examine US National Security Structure**
 - ◆ What is the US structure to balance winning the war of ideas and killing terrorists through military action?
 - ◆ Immediate goal of sharing data/creation of a common data system among allies, agencies, and departments
 - **Understand the Muslim Community**
 - ◆ Understand and utilize the Muslim diaspora
 - ◆ Increase leadership exchanges -- this includes US going abroad to Muslim countries
 - ◆ Obtain a better understanding of Muslim cultural boundaries and how to shape them
 - **Wage the war of ideas**
 - ◆ What is an alternative to Bin Laden in the eyes of Muslims?
 - ◆ Examine Islamic de-programming techniques
 - **Educate the American public on**
 - ◆ The nature of the conflict
 - ◆ The potential length of the conflict
 - **Define DoD Roles and Missions**
 - ◆ Explore how the military can be effectively used across a broad range of missions to address the conflict (e.g. assistance and security, El Salvador)
-

This slide summarizes the working group's recommendations to further progress in assessing the GWOT from an insurgency framework. They are listed roughly in priority, with the first bullet being the highest, the 2nd through 4th being the next tier, and the 5th is the last.

The first has the highest priority because it will establish who is responsible for conducting the remainder of the tasks. The second tier (bullets two through four) are crucial for winning the war of ideas and seizing the conflicts center of gravity: the people. The last is of importance to the Department.

**The Global War on Terrorism: Analytical
Support, Tools, and Metrics of
Assessment**

Synthesis Working Group

*30 November - 2 December 2004
US Naval War College
Newport, Rhode Island*

Co-Chairs:

Col Jerry Diaz and

Dr Greg Parnell, FS

GWOT Synthesis Working Group

The Synthesis Working Group (SWG) is a strategic body that helps the workshop achieve its objectives by

- **Synthesizing the products of the six working groups by**
 - ◆ Determining common themes
 - ◆ Highlighting the seams or gaps
 - ◆ Identifying critical issues
 - **Facilitating as necessary**
 - **Developing overarching workshop recommendations**
-

A MORS workshop is fundamentally different than the MORS Symposium or a mini-symposium. In a symposium setting, you sit back and receive presentations about the work that colleagues are pursuing. In a workshop, you are expected to participate in the discussion. Your working group lead should schedule at least as much time for discussion as there is for presentations. The output is more than knowledge gained, but a product distinct to that working group's goals.

The goal of the GWOT workshop was to provide a forum for discussing analytic support, tools, metrics, and to gain insight on operational assessment techniques and capabilities to better support the GWOT. The objective of the SWG is to help the Workshop Chair achieve his goals for a successful meeting. We asked the Synthesis members to identify three things:

1. Themes that are common to other working groups
2. Gaps or seams that the working groups or the workshop is missing
3. Critical issues that may be unique to that working group, but need to be reinforced to the entire workshop

Also, we helped the working group leads by facilitating as necessary and as a group, developed overarching workshop recommendations.

SWG Members



	WG-1 Forecasting Instability	WG-2 Analytic Supp to Stab Ops	WG-3 Tools to Supp GWOT	WG-4 Assess Mil Effic in GWOT	WG-5 HLDHLS Workshop Def	WG-6 GWOT Prob Def
<u>Gene Visco, FS</u>	X					
<u>Greg Parnell, FS</u>						X
<u>Mike Neighbour</u>			X			
<u>Mike Garrambone</u>			X			
<u>Dick Deckro</u>		X				
<u>Don Duncan</u>				X		
<u>Dave Davis</u>		X				
<u>Jim Bexfield, FS</u>						X
<u>Jerry Diaz</u>					X	

We had nine members on the Synthesis group — a group of very senior, eclectic, MORS'ians to be sure. Some of our members sat in one working group, others floated amongst groups.

SWG GWOT Observations

GWOT presents a tremendous challenge:

- **The world is confronted with an insurgency within Islam**
 - **Operations primarily against globalization of western values and influence**
 - **Leverage network of extremists that export terrorism locally, regionally, and globally**
 - **WMD significantly magnifies risk**
-

We had some general observations about the workshop. The Global War on Terror presents us with tremendous challenges:

- We are confronted with an insurgency within Islam. We recognize that our fight is not against the Islamic Religion, but with extremists within Islam. Further, although we make the point that our fight is not against Islam, we then use words that make it sound like it is.
- The enemy conducts operations against the globalization of western values and influence.
- The threat is not hierarchical in nature. It is a collection of loosely networked cells that act independent of each other and any chain of command.
- Further, weapons of mass destruction, i.e. technology, magnify the risk to our populace and way of life.

SWG Observations



- **GWOT is difficult because of its breadth**

- ◆ Need to assess effectiveness of specific operations, but to evaluate globally
- ◆ Cannot afford to *win the battle*, but *lose the war or the peace*

- **Need to define the end state**

- ◆ US/Allies globally, regionally, locally
- ◆ Timeline: *War of Generations*
- ◆ Identify milestones to get there? Metrics?

- **Documents that lay an initial framework for GWOT**

- ◆ National Strategy for Combating Terrorism
 - ◆ National Military Strategic Plan for the WOT (DRAFT)
 - ◆ US Government Action Plan for the War on Terror
 - ◆ OPLAN 71 – Identifies SOCOM as the military lead for GWOT
-

The Global War on Terror is difficult to assess because of its breadth. It is far easier for us to assess the impact of a particular operation than to determine its impact on this global war. We need to think globally.

We need to be able to determine the impact of yesterday's battle in Faluja on tomorrow's fight in Indonesia. Where is the analyses to determine this? Who is thinking globally? Where is the organization, tiger team, working group, that is advising and evaluating the use of National power in this global war. We cannot afford to win the battle, but lose the war or lose the peace.

We need to define the end state of the GWOT. How are we going to plot a path to get there if we don't know where *there* is? It has been said that this is a *War of Generations*. In our society of instant gratification, short attention spans, "I want it yesterday" mentalities, how will we stay the course over the long haul without a destination and milestones and metrics to get us there?

Finally, there are several documents directly related to GWOT. We found that many of us had never heard of them, much less read them. These are must reads.

SWG Observations

- **Need to understand this War on Terror**

- ◆ Fundamentally different ideology than the Cold War
- ◆ Winnable in what sense? (War on poverty? War on Drugs?)

- **Need to understand the enemy**

- ◆ Environment: culture, religion, countries
- ◆ Determine the centers of gravity
- ◆ Sociological Intelligence Preparation of Battlefield (not geographical)
- ◆ Are there parallels to other "social" challenges (inner-city gangs?)

- **Need a common lexicon**

- ◆ Definitions and framework
-

We need to understand our enemy.

-This is a fundamentally different war than the Cold War. At the height of the Cold War, if, for example, you brought a Communist Politico to Wal-Mart, he would be amazed at the wealth of our country and at what an open, free market economy can bring. If you bring a terrorist to Wal-Mart, all he sees is an example of the decadence of the *Great Satan*.

-The Global War on Terror is winnable, but in what sense? Will we be able to fully eliminate it? Is it similar to the War of Poverty or the War on Drugs?

We need to understand the centers of gravity of our enemy, and the environment that spawns him and her.

-We need to perform an Intelligence Preparation of the Battlefield. Not a geographical one, but a sociological one for a global campaign plan.

-We need to determine if there are parallels to other social challenges like inner-city gangs. Is the despair and lack of hope that fuels the gang similar to what fuels terrorist recruiting?

We need a common lexicon to ensure we're not talking past each other.

SWG Observations



• Analyses of the application of National Power

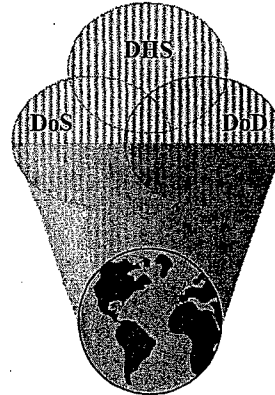
- ◆ Tenets: Military, Diplomatic, Economic...
- ◆ Methodologies, metrics, and tools

• Need cooperation

- ◆ Inter-Agency/Departmental/National levels
- ◆ Coordination and interoperability
- ◆ Data, data, data... (and share it)

• Distinct/immediate challenges

- ◆ Homeland Defense/Homeland Security
- ◆ Phase IV of warfare
- ◆ ORSAs in other agencies
- ◆ Security/OPSEC constraints



The Global War on Terror will not be won through military power alone. It will require all the tenets of our National power (military, diplomatic, economic...). Where do we analyze the application of National power? If the President asks the DoD to solve a problem, he gets a military answer; the State Department, a diplomatic one. Where do we evaluate the apportionment of National power? Where are the methodologies, metrics, and tools to assess a little bit of this and some of that?

All the WGs recognized the need for interagency, interdepartmental, and international cooperation and the ability to analyze combined actions. However, stovepipes and the lack of clearly defined responsibilities make this difficult. For example, local law enforcement agencies do not wish to share crime fighting information because of their "OPSEC" concerns. We need to break down these stovepipes within our own government. Now, these stovepipes are not surprising. Our country is fueled by capitalism, capitalism means competition, and competition leads to stovepipes. But for our future, we need to find a way to break these stovepipes down.

We have some unique and immediate challenges today. The DoD is a player, not leader, in these challenges. For Homeland Security, civil agencies have the lead and DoD is supporting. For the GWOT, the Department of State has the lead. Where are the ORSAs of the other agencies? What is the venue that we come together in to provide support to our leaders? In what context can we assess our ability to perform in this supporting role?

SWG Observations

Preparing the GWOT analysts

- **Limited resources, increasing requirements**
 - ◆ Organize, train, and equip
 - **Phenomenology is primarily social, not physical**
 - ◆ Social science/political/history training
 - ◆ Recruiting into the ORSA community
 - **Essential skill set**
 - ◆ Ability to facilitate development relevant metrics for campaign phases
 - ◆ Descriptive statistics, ability to identify trends and forecast and put them into context
 - ◆ Actionable analyses
 - ◆ Simple, self-explanatory, graphical output
 - **Capturing Lessons Learned**
 - ◆ Project Camelot – modeling instability in South America
 - ◆ Combat Analyst website – joint, coalition...?
-

There is a real concern amongst the working group about the increasing need for analyses and analysts. There is a need for more analysts within the Combatant Commands and analysts that understand other Department and Agency capabilities.

If we believe that the Global War on Terror is fundamentally a different war, and a war of generations, what are we, as a MORS community, doing to prepare ourselves? The phenomenology of this war is primarily social, not physical. What are we doing to get ourselves the necessary social, political, and historical training? Operations research is a multidisciplinary field. How are we attracting folks with the right backgrounds and expertise into our community?

Has our essential skill set changed? Is this war fundamentally different? Are we prepared?

How are we capturing analytic lessons learned?

-In the 1960s, the Army conducted Project Camelot where they modeled instability in South America. Is this model relevant today? Only one person in the workshop knew about this project. How are we not losing work from the past?

-Both the AF and the Army have developed a Combat Analyst website. Do we need a joint site? Should we develop a coalition site?

Recommendations to Sponsors

- **Need a campaign plan for GWOT**
 - **Identify/analyze/exploit GWOT centers of gravity**
 - ◆ Islamic extremism?
 - ◆ The populations?
 - ◆ Western influence/presence?
 - **Plan for the long term (*war of generations*)**
 - ◆ Title 10 – organize, train, and equip ORSAs for GWOT
 - ◆ Expand ORSA talent pool (social science, political science,...)
 - **Facilitate coordination across the government**
 - ◆ Ability to analyze the use of National power
-

We close with overarching recommendations to our MORS Sponsors.

1. Develop a campaign analysis plan for the Global War on Terror. One that is globally strategic and considers all the tenets of the National power of the US and our allies.
2. Identify and analyze the centers of gravity of our enemy. Use this as a basis to build the campaign analysis plan.
3. Plan for the long term. Organize, train, and equip ORSAs for the Global War on Terror. Further, make a conscious effort to expand the pool of ORSA talent, to make it more interdisciplinary with the social sciences.
4. Finally, facilitate the coordination of analyses across the government to be able to analyze the use of National power.

Finally, it was agreed by the SWG members that this was an outstanding workshop. It was obvious that the workshop chairs and working group leads had done a great deal of preparation and demonstrated strong leadership throughout the conference. Thank you for a great workshop.

Acronyms

MORS Workshop The Global War on Terrorism: Analytical Support, Tools, and Metrics of Assessment

ABA	American Bankers Association
ACTOR	Analyzing Complex Threats for Operations and Readiness
AFSAA	Air Force Studies and Analyses Agency
AOC	Air Operations Center
BICE	Bureau of Immigration and Customs Enforcement
CAA	Center for Army Analyses
CALL	Center for Army Lessons Learned
CDC	Center for Disease Control
CIA	Central Intelligence Agency
COA	Course of Action
COAST	Course of Action Selection Tool
COCOM	Combatant Command (Command Authority)
CTAC	Counter-Terrorism Analysis Capability
DHS	Department of Homeland Security
DIA	Defense Intelligence Agency
DIME	Diplomatic, Information, Military and Economic
DoD	Department of Defense
DOT	Department of Transportation
DPS	Defense Planning Scenarios
DTRA	Defense Threat Reduction Agency
EBO	Effects Based Operations
EEA	Environmental Effects Architecture
EUCOM	United States European Command
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigations
FEMA	Federal Emergency Management Agency
G1-G7	Army or Marine Corps component operations staff officer (Army division or higher staff, Marine Corps brigade or higher staff)
GIS	Geographical Information System
GWOT	Global War on Terrorism
HAZMAT	Hazardous Materials
HHS	US Department of Health and Human Resources
HUMINT	Human Intelligence
HW/SW	Hardware/Software
I/O	Input/Output (example XML - eXtensible Markup Language)
IGO	Inter-Governmental Organization
IO	Information Operations
J2	Joint Staff Intelligence Directorate
J3	Joint Staff Operations Directorate
J5	Joint Staff Plans Directorate
JCS	Joint Chiefs of Staff

JFCOM	Joint Forces Command
JTAMDO	Joint Theater Air and Missile Defense Organization
MCO	Major Combat Operations
MDA	Missile Defense Agency
MOE	Measure of Effectiveness
MORS	Military Operations Research Society
MSO	Military Strategic Objectives
NGB	National Guard Bureau
NGO	Non-Governmental Organization
NIH	National Institute of Health
NMSP-WOT	Nation Military Strategic Plan for War on Terrorism
N-NC BPG	NORAD - NORTHCOM and the Bi-National Planning Group
NSC	National Security Council
OCR	Office of Collateral Responsibility
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OPR	Office of Primary Responsibility
OPSEC	Operations Security
OR	Operations Research
ORSA	Operations Research and System Analysis
OSD	Office of the Secretary of Defense
PACOM	United States Pacific Command
POC	Point of Contact
PSYOP	Psychological Operations
PVO	Private Venture Organization
QDR	Quadrennial Defense Review
S&T	Scientific and Technical
SECDEF	Secretary of Defense
SIGINT	Signals Intelligence
SMDC	Space and Missile Defense Command (Army)
SOCOM	United States Special Operations Command
SWG	Synthesis Working Group
SWOT	Strengths, Weaknesses, Opportunities and Threats
TAPAS	Threat Anticipation Program Agent-Based Simulations
TOR	Terms of Reference
TSA	Transportation Security Administration
UK	United Kingdom
US	United States
USA	United States Army
USAF	United States Air Force
USAID	US Agency for International Development
USCG	United States Coast Guard
USG	United States Government
USMC	United States Marine Corps
USN	United States Navy
WMD	Weapons of Mass Destruction

Terms of Reference

MORS Workshop The Global War on Terrorism: Analytical Support, Tools, and Metrics of Assessment

1. Background

The September 11, 2001 terrorist attacks on the World Trade Center and the Pentagon have thrust the United States into the Global War on Terrorism (GWOT). As a result the U.S. has joined the rest of the world by entering into a new age of instability. Combating these terrorist threats has demanded that our armed forces conduct operations simultaneously across the full spectrum of conflict – from conventional combat in major contingency operations as in OPERATION IRAQI FREEDOM to peace operations such as OPERATION JOINT FORGE. Subsequently, the value of analysts who support the warfighter has and will continue to be a significant combat multiplier in these efforts.

Recent experiences in providing analytic support to the combatant commanders in the prosecution of the GWOT have brought to the fore several areas that are of major importance and interest to the warfighter. These include:

- The determination of nation state and regional instability
- The conduct of stability operations
- Analytic Tools to support the GWOT
- Metrics of Assessment in the GWOT
- Homeland Defense
- Problem Definition

2. Sponsor Interest

All MORS Sponsors have expressed a strong interest in this workshop.

3. Goals and Objectives

The proposed meeting will provide a forum for discussing analytic support, tools and metrics of assessment in the Global War on Terrorism. The workshop will bring together analysts and decision-makers from within DoD (e.g., Services, Combatant Commands, and associated Agencies), from other Departments (e.g.,

State and Homeland Security), as well as Allied countries. The goal is to gain insight on operational assessment techniques and capabilities to better support the Global War on Terrorism.

The Global War on Terrorism: Analytic Support, Tools and Metrics of Assessment (GWOT: ATM) workshop will be organized into six working groups and one synthesis group. The six working groups will address the key following issues; 1) forecasting nation state and regional instability, 2) analytic support to stability operations, 3) analytic tools to support the GWOT, 4) metrics of assessment in the GWOT, 5) homeland defense, and 6) GWOT problem definition. These working groups are not mutually exclusive, and this is deliberate. Explicitly introducing overlap between the working groups provides synthesis points for integrating the conclusions from each, and reduces the probability that major ideas will “fall through the cracks” between the workshop topics.

WG-1 Forecasting Nation State and Regional Instability—Identify analytic skills, tools, models, methods and metrics for forecasting instability at the national and regional level that can be exploited either by global terrorists or by those waging war on them. This working group will focus on measuring and forecasting:

- National and regional stability in the absence of military intervention by the U.S. and its allies as a precursor to military intervention
- National and regional stability during military intervention by the U.S. and its allies, specifically the stability effects on our allies who have strategic links with the region under attack
- National and regional stability after military intervention by the U.S. and its allies
- The kinds of instability that are beneficial to the U.S., and how to trigger them
- How global terrorists will try to create or exploit instability, and how to counter them

WG-2 Analytic Support to Stability Operations—Identify analytic skills, tools, models, methods and metrics for supporting stability operations in nations and regions after military intervention by the U.S. This working group will focus on:

- The transition from major combat operations (MCO) to counter-terrorism and counter insurgency
- Supporting a political process that is both appropriate to the region and culture and that enhances security

- Predicting the actions of global terrorists in the nation or region after major combat operations and after the U.S. has withdrawn
- Predicting what kind of actions during MCO will best support stability operations both during and after MCO

WG-3 GWOT: Tools, Data & Decision Support—Identify tools, models, methods and metrics for combating global terrorists. This working group will focus on support and measures for:

- Predicting terrorist attacks
- Identifying terrorists
- Locating terrorist funds and funding streams
- Predicting the effects of actions taken against terrorists
- Engaging in a war of ideas in the U.S. and overseas
- Construction of social networks of terrorist organizations
- Identifying which individual terrorists to kill, capture or subvert for maximum effect
- Identifying best actions to take

WG-4 Metrics for Assessing Military Effectiveness in the GWOT — Identify useful measures of effectiveness to monitor and improve military effectiveness in the Global War on Terrorism. This working group will focus on military responsibilities, decisions, and activities in the GWOT.

Considering the strategic, operational, and tactical levels of warfare, this working group will explore the metrics that would be useful in providing insight to decision makers within these areas. For each identified metric the group will determine methods and sources of data to obtain these measures.

WG-5 Homeland Defense – Identify the issues associated with 1) traditional military operations and 2) civil support of HLD and will identify useful decision support tools, models and metrics for quantifying the broad range of issues facing HLD decision-makers. This working group will also organize these tools, models and metrics into focus areas for a potential separate workshop in 2005. The focus areas for this working group will consist of:

- Traditional military operations related to Ground-based Missile Defense, Integrated Air Defense Systems, National Special Security Events, etc.
- Identification of trigger points and thresholds for federal support to first responders and the associated quantitative measures

- Identification of measures and methods for critical infrastructure identification and protection including potential centers of gravity that could be exploited by terrorists
- Identification and quantification of the requirements and linkages for interagency and first responder coordination associated with both natural disasters and terrorist-sponsored attacks
- Identification of useful modeling and simulation tools for HLD issues
- Characterization, identification, and quantification of potential threat axes' of approach

WG-6 GWOT Problem Definition – Identify the differences in terminology, assumptions on the cause, and the nature of the threat that lead to confusion and misdirection of efforts. This working group will focus on defining:

- Different perceptions of the problem and the assumptions behind those perceptions
- An analytic framework for understanding the threat
- Measures and methods for data collection for elements of threat support and capability
- Measures and methods for assessing vulnerabilities and centers of gravity that the U.S. can exploit

Synthesis Group—The synthesis group will bring together the work of the six working groups and develop the overall recommendations from the analysis community to the individual service operations analysts. As well, this group will provide inputs and recommendations on development of analytic support to the GWOT.

4. Deliverables:

The MORS Synthesis Group will provide documentation listing actionable items to pursue that will facilitate the ORSA community in supporting the Global War on Terrorism. This will be in the form of a report and a briefing to the MORS Sponsors that lists state of the art assessment methods. These methods will include empirical data collection techniques leading to the development of usable models for forecasting national and regional instability (e.g. structural equation modeling). A summary of the report will be published in *PHALANX* and will be briefed at the 73rd MORS Symposium in June 2005.

Each working group will present a recommended analysis approach for each of their topics, including a course of action for implementing the approach. These

suggested approaches will identify current tools, models, methods and metrics that may be used in assessing the effectiveness of the GWOT, for example: How successful are we at disrupting the financial flows of terrorist organizations? How do we measure the progress of stability operations? This will provide a basis for building a library of appropriate assessment tools.

Further, recommendations for future workshops and working group meetings that will concentrate on specific areas will be proposed for Sponsor consideration.

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Synthesis Chairs: Dr. Greg Parnell, Gregory.Parnell@usma.edu, 845-938-4374

Col Jerry Diaz, jerry.diaz@pentagon.af.mil, 703-588-6969

6. Organizing Committee:

Dr. Forrest Crain	Army G3	703-614-9120	William.F.Crain@us.army.mil
Dr. Stephen Downes-Martin	NWC-WGD	401-841-6933	downess@nwc.navy.mil
Dr. Lynee Murray	NAVSEA NUWC	401-832-3543	MurrayLD@Npt.NUWC.Navy.mil
Dr. Dick Deckro	AFIT	937-255-6565 x4325	Richard.deckro@afit.edu
Mr. Brian Engler	MORS	703-933-9070	brian@mors.org
Ms. Natalie Kelly	MORS	703-933-9070	natalie@mors.org

Plus All Working Group Chairs (listed above)

7. Location and Dates

United States Naval War College, Newport, Rhode Island, 30 November – 2 December 2004.

8. Fees

Full Workshop: US Federal Government: \$225/All Others: \$450

One Day Only: US Federal Government: \$115/All Others: \$230

9. Classification: The Tuesday Plenary Session, Thursday Working Group Report-Out Session and two working groups (1 and 3) will be at the UNCLASSIFIED level, with all papers Approved for Public Release. One working group (2) will be at the UNCLASSIFIED level, except for one session. Three working groups (4, 5, and 6) will be at the classified level.

10. Agenda

Day/Time	Activity	POC
Monday	November 29, 2004	
1700	Working Group Co-Chair Warm-Up Session	Workshop Co-Chairs
Tuesday	November 30, 2004	
0700	Registration and Continental Breakfast	McCarty-Little Hall
0800	MORS President's Welcome	Dr. Andy Loerch
0805	Facility Host Welcome	TBD
0810	Sponsor's Welcome	TBD
0820	Chair's Welcome, Workshop Overview	TBD
0830	Keynote Speaker	Invited Speaker TBD
0930	Break	
1000	GWOT Panel Presentations	Invited Speakers—CJTF 7, CJTF 180, Allied—TBD
1130	Lunch	
1230	Guest Speaker—NWC (T)	TBD
1400	Working Group Session #1	Working Group Co-Chairs
1700	Mixer	
Wednesday	December 1, 2004	
0715	Continental Breakfast	McCarty-Little Hall
0800	Working Group Session #2	Working Group Co-Chairs
0945	Break	
1000	Working Group Session #3	Working Group Co-Chairs
1130-1300	Lunch	
1300	Working Group Session #4	Working Group Co-Chairs
1500	Break	
1515	Working Group Session #5	Working Group Co-Chairs
1700	Working Group Chair & Co-Chairs Hot wash	Workshop Chair
Thursday	December 2, 2004	
0715	Continental Breakfast	McCarty-Little Hall
0800	Working Groups Session #6	Working Group Co-Chairs
0945	Break	

1000	Working Groups Session #7 (Prepare Briefing)	Working Group Co-Chairs
1200-1330	Lunch	
1330	Working Groups: Present Briefings, WG 1, 2, 3	Working Group Co-Chairs
1500	Break	
1515	Working Groups: Present Briefings, WG 4, 5 & 6 and Synthesis Group	Working Group Co-Chairs
1645	Workshop Wrap-Up	Workshop Chair
1700	Adjourn Workshop	Workshop Chair
Friday	December 3, 2004	
0800	Working Group Co-Chairs complete Working Group Annotated Briefing	Working Group Co-Chairs
1200	Adjourn Post-Workshop Session	Workshop Chair

Analysis of GWOT Tools Database

DRAFT

MORS Workshop

The Global War on Terrorism:

Analytical Support, Tools, and Metrics of Assessment

(Working Group 3)

The accompanying Excel workbook contains two worksheets. The first is a Tools versus Questions worksheet and the second is a Tools versus Methods worksheet.

1. Tools vs Questions

The Tools are grouped by the categories in the database: data, methods, persons, and tools. The Questions represent the needs of the end-users, which should be served by the Tools. I have grouped the Questions by "Know?", "Plan?", "Do?", "Assess?", and "Support?". (I know the commas go inside quotes, but that's stupid here.)

Observing the grand totals for tools that support each question gives the impression that most of the questions are well covered by tools of one sort or another. The obvious exception is the question "What metrics do we need to develop?"

Less obvious, is the lack of coverage in the "Do?" group. Only three items in the database address this group: "Engaging in a War of ideas at home and Abroad," "How do we detect and counter deception?," and "How we identify individual terrorist to kill?" Clearly, there are other actions that are needed in the war on terrorism. Obvious actions, such as various legal operations, are not germane to the Department of Defense. However, there may be other actions that the DoD should be considering. Hence, I have added the question, "How do we define & select other actions?" Some of the tools in the database may support this question; however, other tools may be needed.

The number of tools that are needed to address all of the questions is very large, implying that consolidation, linking, or expansion of existing tools would be helpful.

2. Tools vs Methods

The Tools are sorted to group together those tools that use the same methods or at least to get the ones using each method near to each other. I have also grouped the tools into Unknown, Simulation, Influence, Association, Data, Behavior, Language, and Support groups.

The Influence group displays an obvious weakness in its total representation; however, when only dedicated tools are counted, weaknesses show up in simulation and behavior. Perhaps some of the tools with unknown methods actually reinforce some of these groups.

The number of tools that are needed to use all of the methods is very large, implying that consolidation, linking, or expansion of existing tools would be helpful.

3. Recommendations

Six recommendations can be based on this analysis:

- More work is required to develop metrics;
- Work is needed to determine what other alternative actions might aid the GWOT;
- Influence methods need to be better developed;
- Actual simulations need to be developed;
- More behavior tools are needed; and
- Consolidation, linking, or expansion of existing tools would be helpful.

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS		Questions?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?
Category	Name	What is the nature of GWOT?	What background information do we know?	What events do we know?	What organizations do we know?	What names do we know?	Identify Terrorists	Locating and modeling Terrorist Funds and funding streams	Locating and modeling Terrorist Resource and Resource streams			
DATA	NDU Coalition											
DATA	QIO Database											
DATA	Singapore database											
DATA	St. Andrew's University of Scotland											
DATA	Terrorist Threat Information Center											
DATA		0	0	5	0	5	0	0	0			
Total												
METHOD	Automated Information Extraction System											
METHOD	Bayesian Influence Analysis											
METHOD	Behavioral Influence Analysis											
METHOD	Complex Adaptive Systems											
METHOD	Cultural Modeling											
METHOD	Dynamic Network Analysis											
METHOD	Hidden Markov Methods											
METHOD	Individual Agent Modeling (Project Albert)											
METHOD	Individual Behavior Modeling											
METHOD	KEDS											
METHOD	Natural Language Processing											
METHOD	Organizational Agent Modeling											
METHOD	Social Network Analysis											
METHOD		5	0	2	6	6	7	4	5			
Total												
PERSON	Abuza, Dr. Zachary (author)											
PERSON	Human Factors Forum											
PERSON	Jones, Sidney (author)											
PERSON	Priest, Dana (reporter)											
PERSON	Stern, Jessica (author)											
PERSON		0	4	0	0	0	0	0	0			
Total												

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS		Questions?	KNOW?	What background information do we know?	KNOW?	What events do we know?	KNOW?	What organizations do we know?	KNOW?	What names do we know?	KNOW?	Identify Terrorists?	KNOW?	Locating and modeling Terrorist Funds and funding streams	KNOW?	Locating and modeling Terrorist Resource and Resource streams	KNOW?
Category	Name	What is the nature of GWOT?	KNOW?	What background information do we know?	KNOW?	What events do we know?	KNOW?	What organizations do we know?	KNOW?	What names do we know?	KNOW?	Identify Terrorists?	KNOW?	Locating and modeling Terrorist Funds and funding streams	KNOW?	Locating and modeling Terrorist Resource and Resource streams	KNOW?
TOOL	also see:																
TOOL	Analysis of Complex Threats for Operations and Readiness (ACJOR)																
TOOL	AutoMap																
TOOL	BioWar																
TOOL	breve																
TOOL	CamStudio																
TOOL	CETA																
TOOL	COGNET																
TOOL	Combined Theater Analyst Veted Relational System (CT-AVRS)																
TOOL	Conceptual Model of Counter-Terrorism Operations																
TOOL	Construct																
TOOL	CPOF																
TOOL	Crimelink																
TOOL	DyNet																
TOOL	Elite Network Modeling																
TOOL	EAST DIAMOND US																
TOOL	FAST-ISSM																
TOOL	FatCat																
TOOL	GeoBrowser																
TOOL	GIS (in general)																
TOOL	Graphlet																
TOOL	graphvis																
TOOL	Groove																
TOOL	I2 Analyst's Notebook 6 & supporting products																
TOOL	Information WorkSpace																
TOOL	Insta-Know																
TOOL	JWARN (Joint Warning System)																
TOOL	KeyPlayer																
TOOL	Mage																
TOOL	MatView																
TOOL	MayaVis																
TOOL	Near-term Forecasts of Crisis and Instability using Text-Based Events (NEAR-TERM FORECITE)																

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS		Questions	KNOW?	What background information do we know?	KNOW?	What events do we know?	KNOW?	What organizations do we know?	KNOW?	What names do we know?	KNOW?	Identify terrorists	KNOW?	Locating and modeling Terrorist Funds and funding streams	KNOW?	Locating and modeling Terrorist Resource and Resource streams
Category	Name	What is the nature of GWOT?	KNOW?	What background information do we know?	KNOW?	What events do we know?	KNOW?	What organizations do we know?	KNOW?	What names do we know?	KNOW?	Identify terrorists	KNOW?	Locating and modeling Terrorist Funds and funding streams	KNOW?	Locating and modeling Terrorist Resource and Resource streams
TOOL	Net Meeting															
TOOL	NetDraw															
TOOL	Netica															
TOOL	NetMiner															
TOOL	NetViz															
TOOL	NetworkVis															
TOOL	Novel Intelligence from Massive Data (NIMD)															
TOOL	OCULIS															
TOOL	ORA															
TOOL	Parsek															
TOOL	ProjectAlbert/Visualization Tools															
TOOL	REPAST															
TOOL	SAIL Labs Media Mining (MM) & Communications Mining (CM) Tool															
TOOL	SameTime															
TOOL	SAS															
TOOL	SIAM															
TOOL	Siena															
TOOL	SoNIA															
TOOL	Spot Fire															
TOOL	SPSS Clementine															
TOOL	Starlight															
TOOL	STRATMAS															
TOOL	swarm															
TOOL	System Dynamics Modeling															
TOOL	Threat Anticipation Program Agent Simulation (TAPAS)															
TOOL	Threat HUMINT Reporting Extracting & Display System (THREADS)															
TOOL	Tom Sawyer															
TOOL	TouchGraph															
TOOL	ucinet															
TOOL	VisualLinks 2.0															
TOOL	WebTAS															
TOOL	WilmaScope															

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS		QUESTIONS	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?
Category	Name	What is the nature of GWOT?	What background information do we know?	What events do we know?	What organizations do we know?	What names do we know?	Identify Terrorists	Locating and modeling Terrorist Funds and funding streams	Locating and modeling Terrorist Resource and Resource streams		
TOOL		8	2	9	8	12	18	14	16		
Total		13	6	16	14	23	25	18	21		
Grand Total											

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS		KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?
Category	Name	Constitution of Social Network of Parent Orgs?	How do we do Adversary Modeling?	How do we support creating strategy and objectives?	How do we support planning, execution monitoring and assessment?	PLAN?	PLAN?	PLAN?	DO?
DATA	NDU Coalition								
DATA	OIO Database								
DATA	Singapore database								
DATA	St. Andrew's University of Scotland								
DATA	Terrorist Threat Information Center	0	0	0	0	0	0	0	0
DATA Total									
METHOD	Automated Information Extraction System								
METHOD	Bayesian Influence Analysis								
METHOD	Behavioral Influence Analysis								
METHOD	Complex/Adaptive Systems								
METHOD	Cultural Modeling								
METHOD	Dynamic Network Analysis								
METHOD	Hidden Markov Methods								
METHOD	Individual Agent Modeling (Project Albert)								
METHOD	Individual Behavior Modeling								
METHOD	KEDS								
METHOD	Natural Language Processing								
METHOD	Organizational Agent Modeling								
METHOD	Social Network Analysis	5	8	4	4	3	5		
METHOD Total									
PERSON	Abuza, Dr. Zachary (author)								
PERSON	Human Factors Forum								
PERSON	Jones, Sidney (author)								
PERSON	Priest, Dana (reporter)								
PERSON	Stern, Jessica (author)	0	0	0	0	0	0	0	0
PERSON Total									

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS		KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?
Category	Name	Construction of Social Network of Parent Orgs?	How do we do Adversary Modeling?	How do we support creating strategy and objectives?	How do we support planning execution monitoring and assessment?	PLAN?	PLAN?	PLAN?	DO?
TOOL	aiSee								
TOOL	Analysis of Complex Threats for Operations and Readiness (ACTOR)								
TOOL	AutoMap								
TOOL	BioWar								
TOOL	breve								
TOOL	CamStudio								
TOOL	CETA								
TOOL	COGNET								
TOOL	Combined Theater Analyst-Verified Relational System (CT-AVRS)								
TOOL	Conceptual Model for Counter-Terrorism Operations								
TOOL	Construct								
TOOL	CPOF								
TOOL	GrimLink								
TOOL	DyNet								
TOOL	Elite Network Modeling								
TOOL	FAST DIAMONDUS								
TOOL	FAST-ISM								
TOOL	FatCat								
TOOL	Geo-Browser								
TOOL	GIS (in general)								
TOOL	Graphlet								
TOOL	graphVis								
TOOL	Groove								
TOOL	I2 Analyst's Notebook 6.8 supporting products								
TOOL	Information WorkSpace								
TOOL	Insta-Know								
TOOL	JWARN (Joint Warning System)								
TOOL	KeyPlayer								
TOOL	Mage								
TOOL	MatView								
TOOL	MayaVis								
TOOL	Near-term Forecasts of Crisis and Instability using Text-Based Events (NEAR-TERM FORECITE)								

GWOT Tools Database
(Working Group 3)

TOOLS vs QUESTIONS		KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?
Category	Name	Construction of Social Network or Parent Orgs?	How do we do Adversary Modeling?	How do we support creating strategy and objectives?	How do we support planning, execution monitoring and assessment?	PLAN?	PLAN?	PLAN?	PLAN?	DO?
TOOL	NetMeeting									Engaging in a War of Ideas at home and Abroad
TOOL	NetDraw									
TOOL	Netica									
TOOL	NetMiner									
TOOL	NetViz									
TOOL	NetworkVis									
TOOL	Novel Intelligence from Massive Data (NIMD)									
TOOL	OCULIS									
TOOL	ORA									
TOOL	paJak									
TOOL	Project Albert Visualization Tools									
TOOL	REPAST									
TOOL	SAIL Labs Media Mining (MM) & Communications Mining (CM) Tool									
TOOL	SameTime									
TOOL	SAS									
TOOL	SIAM									
TOOL	Siena									
TOOL	SONIA									
TOOL	Spot Fire									
TOOL	SPSS/Clementine									
TOOL	Stalight									
TOOL	STRATIMAS									
TOOL	swarm									
TOOL	System Dynamics Modeling									
TOOL	Threat Anticipation Program Agent Simulation (TAPAS)									
TOOL	Threat HUMINT Reporting Extracting & Display System (THREADS)									
TOOL	Tom Sawyer									
TOOL	TouchGraph									
TOOL	uchet									
TOOL	VisualLinks 2.0									
TOOL	WebTAS									
TOOL	WilmaScope									

GWOT Tools Database
(Working Group 3)

TOOLS vs QUESTIONS		KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?	KNOW?
Category	Name	Construction of Social Network of Parent Orgs?	How do we do: Adversary Modeling?	How do we support creating strategy and objectives?	How do we support planning execution monitoring and assessment?	PLAN?	PLAN?	PLAN?	DO?
		7	14	14	19	8	12	17	
TOOL									
Total		12	22	18	23	11	17	17	
Grand Total									

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS		DO?	DO?	DO?	DO?	ASSESS?	ASSESS?	ASSESS?	SUPPORT?	TOOL
Category	Name	How do we detect and counter deception?	How we identify individual terrorist to kill?	How do we define & select other actions?	What Metrics Do We Need to Develop?	Predicting Effects of Actions Taken Against Terrorists	Support to other tools	TOOL Total		
DATA	NDU Coalition							2		
DATA	QIO Database							2		
DATA	Singapore database							2		
DATA	St. Andrew's University of Scotland							2		
DATA	Terrorist Threat Information Center							2		
DATA Total		0	0		0	0	0	5		
METHOD	Automated Information Extraction System							8		
METHOD	Bayesian Influence Analysis							6		
METHOD	Behavioral Influence Analysis							2		
METHOD	Complex Adaptive Systems							2		
METHOD	Cultural Modeling							8		
METHOD	Dynamic Network Analysis							10		
METHOD	Hidden Markov Methods							7		
METHOD	Individual Agent Modeling (Project Albert)							9		
METHOD	Individual Behavior Modeling							9		
METHOD	KEDS							4		
METHOD	Natural Language Processing							1		
METHOD	Organizational Agent Modeling							1		
METHOD	Social Network Analysis							13		
METHOD Total		3	5		1	7	0	67		
PERSON	Abuza, Dr. Zachary (author)							1		
PERSON	Human Factors Forum							1		
PERSON	Jones, Sidney (author)							1		
PERSON	Priest, Dana (reporter)							1		
PERSON	Stern, Jessica (author)							1		
PERSON Total		0	0		0	0	1	1		

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS									
Category	Name	DO? How do we detect and counter deception?	DO? How do we identify individual terrorist activity?	DO? How do we define & select other actions?	ASSESS? What Metrics Do We Need to Develop?	ASSESS? Predicting Effects of Actions Taken Against Terrorists	SUPPORT? Support to other tools	TOOL Total	
TOOL	aiSee							1	
TOOL	Analysis of Complex Threats for Operations and Readiness (ACTOR)							6	
TOOL	AutoMap							5	
TOOL	BioWat							1	
TOOL	breve							1	
TOOL	CamStudio							1	
TOOL	CEITA							6	
TOOL	COGNEL							10	
TOOL	Combined Theater Analysts Vetted Relational System (CT-AVRS)							4	
TOOL	Conceptual Model of Counter-Terrorism Operations							3	
TOOL	Construct							5	
TOOL	CPoF							6	
TOOL	CrimLink							8	
TOOL	DyNet							10	
TOOL	Elite Network Modeling							1	
TOOL	FAST DIAMOND/US							3	
TOOL	FAST-ISSM							2	
TOOL	FatCat							1	
TOOL	GeoBrowser							1	
TOOL	GIS (in general)							1	
TOOL	Graphlet							1	
TOOL	graphvis							1	
TOOL	Groove							6	
TOOL	12: Analyst's Notebook 6 & supporting products							1	
TOOL	Information WorkSpace							9	
TOOL	Insta-Know							2	
TOOL	JWARN (Joint Warning System)							2	
TOOL	KeyPlayer							1	
TOOL	Mage							1	
TOOL	MatView							2	
TOOL	MayaVis							6	
TOOL	Near-term Forecasts of Crisis and Instability using Text-Based Events (NEAR-TERM FORECITE)								

**GWOT Tools Database
(Working Group 3)**

TOOLS vs QUESTIONS								
Category	Name	DO? How do we detect and counter deception?	DO? How we identify individual terrorists to kill?	DO? How do we define & select other actions?	ASSESS? What Metrics Do We Need to Develop?	ASSESS? Predicting Effects of Actions Taken Against Terrorists	SUPPORT? Supporting other tools	TOOL Total
TOOL	NetMeeting							1
TOOL	NetDraw							1
TOOL	Netica							7
TOOL	NetMiner							1
TOOL	NetViz							1
TOOL	NetworkVis							1
TOOL	Novel Intelligence from Massive Data (NIMD)							2
TOOL	OGULIS							1
TOOL	ORA							10
TOOL	paJEK							1
TOOL	Project Albert/Visualization Tools							1
TOOL	REPEAT							14
TOOL	SAIL Labs Media Mining (MM) & Communications Mining (CM) Tool							11
TOOL	SameTime							1
TOOL	SAS							1
TOOL	SIAM							6
TOOL	Siena							2
TOOL	SONIA							1
TOOL	SpotFire							1
TOOL	SPSS/Clementine							1
TOOL	Starlight							1
TOOL	SUPRATIMAS							7
TOOL	Swarm							14
TOOL	System Dynamics Modeling							7
TOOL	Threat Anticipation Program Agent Simulation (TAPAS)							2
TOOL	Threat HUMINT Reporting Extracting & Display System (THREADS)							10
TOOL	Tom Sawyer							1
TOOL	ToughGraph							1
TOOL	ucinet							1
TOOL	VisualLinks 2.0							6
TOOL	WebTAS							1
TOOL	WilmaScope							1

GWOT Tools Database
(Working Group 3)

TOOLS vs QUESTIONS									
		DO?	DO?	DO?	ASSESS?	ASSESS?	SUPPORT?		
Category	Name	How do we detect and counter deception?	How do we identify individual terrorist to kill?	How do we define & select other actions?	What Metrics Do We Need to Develop?	Predicting Effects of Actions Taken Against Terrorists	Support to other tools	TOOL Total	
TOOL		8	12		2	13	30	199	
Total		11	17			20	31	272	
Grand Total									
Total									